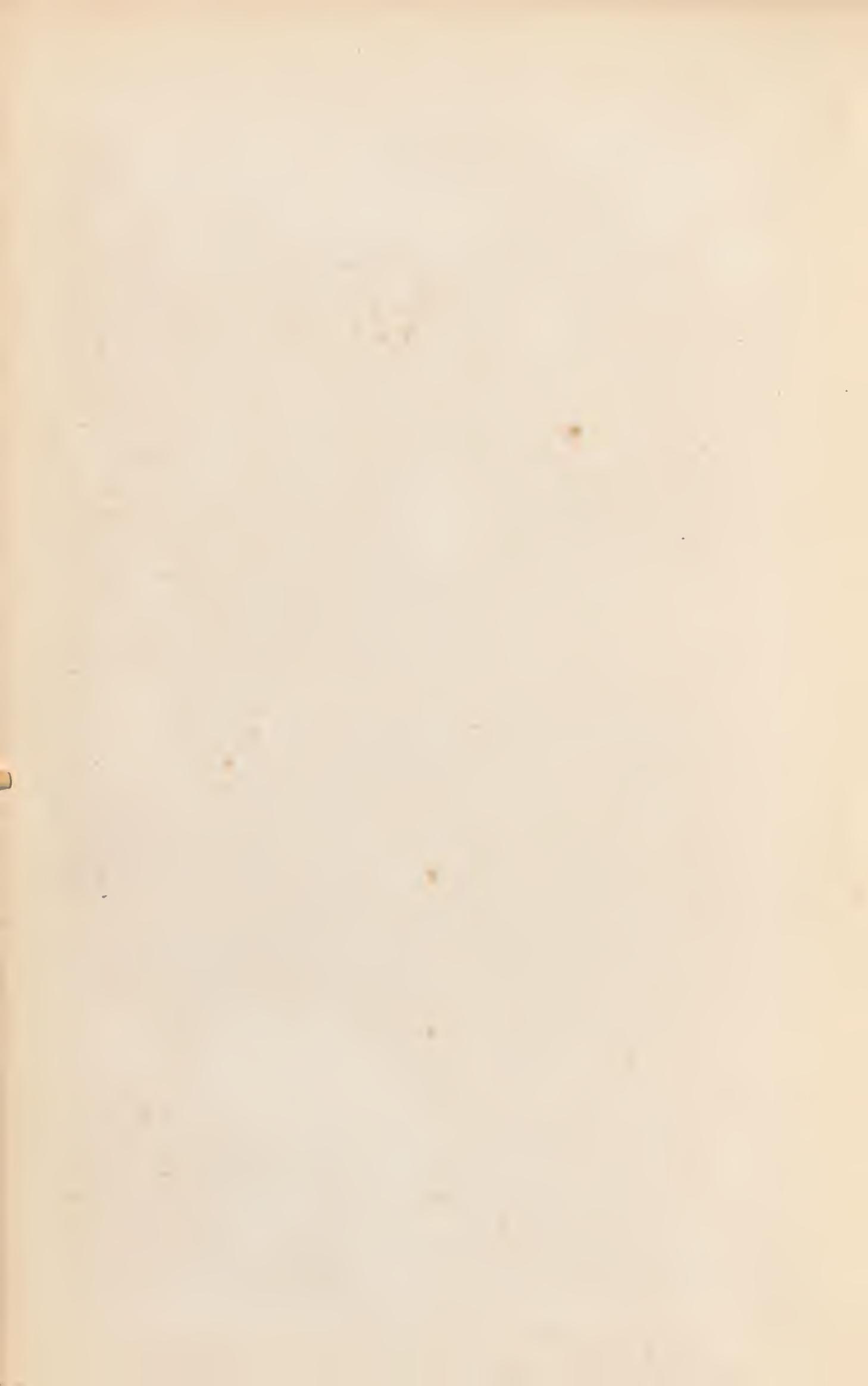




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A PRACTICAL GUIDE
TO
DISEASES OF THE THROAT.



THE
THROAT AND ITS DISEASES.

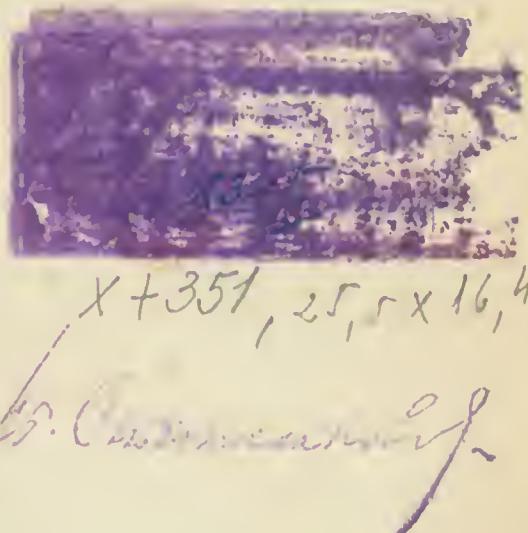
WITH ONE HUNDRED TYPICAL ILLUSTRATIONS IN COLOUR,

AND FIFTY WOOD ENGRAVINGS,

DESIGNED AND EXECUTED BY THE AUTHOR.

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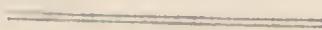
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P R E F A C E.

THE following pages are offered as a practical guide to the diagnosis and treatment of Diseases of the Throat. They are the result of eleven years of work, mainly devoted to those affections, as met with in continuous hospital and private practice during that period.

The book being written especially for the use of those engaged in the active practice of their profession, prominence is given to all matters tending to render diagnosis more accurate and treatment more successful, but no attempt has been made to discuss at length questions of purely pathological interest. These omissions may be the less regretted, as the fullest and most recent information on such points will be found in the admirable Essays on laryngeal diseases, mostly written by Professor Von Ziemssen himself, in his splendid Encyclopædia of Medicine, the English translation of which is now in process of publication. Nor, tempting as were the artistic

inducements to such a course, have any illustrations of *post-mortem* appearances been delineated. The cost of the work would thereby have been largely increased without much practical gain, since it would be difficult to improve on the beautiful plates of such conditions in the atlas of the late Professor Türck.

The author's warmest acknowledgments are accorded to his colleagues, Mr. Douglas Hemming and Mr. Steil. The former has rendered invaluable aid in compilation of the author's notes and in carrying the work through the press; Mr. Steil by keeping accurate reports of many cases on which the author's remarks are based, and by microscopic investigations.

Finally, it is no less just than agreeable to record the author's appreciation of the technical skill and care with which the coloured plates have been executed by the lithographic staff of the printers, Messrs. Wyman & Sons: they have spared no pains to realize his efforts to make the illustrations as faithful to Nature as possible.

36, WEYMOUTH STREET, PORTLAND PLACE, W.

March, 1878.

DISEASES OF THE THROAT.

INTRODUCTORY.

A FEW words with regard to the plan of this work may be useful to the reader.

Attention is mainly directed to the diagnosis and treatment of those diseases of the throat which have been brought more prominently into view since the introduction of the laryngoscope.

The strong reflected light necessary for laryngoscopy has aided in more accurate observation of diseases of the pharynx; while the rhinoscope, a corollary of the laryngeal mirror, has been of equal service in reference to disorders of the naso-pharynx.

There can be no doubt that by means of the laryngoscope, not only are many special local maladies, otherwise invisible during life, brought directly under the eye of the observer, but that in many serious general diseases, such as phthisis, cancer, and syphilis, as well as in cases of aneurismal or glandular tumours, the local condition of the larynx thus revealed, will at a very early period enable us to form a diagnosis and prognosis, which without such knowledge would be often erroneous, or at least doubtful.

Those affections which may be considered peculiar

to the throat have been treated as fully as circumstances would permit, both with reference to their local symptoms and their effect on the general health. In the case, however, of those diseases, such as diphtheria, syphilis, and phthisis, which, although manifesting grave symptoms in the throat and requiring special local treatment, are in point of fact primarily the result of a general poison, attention has been given principally to the diagnosis and treatment of the local malady.

The author's endeavour has been, as far as possible, to avoid unnecessary repetition, and this has been, he trusts, effected by rendering the earlier chapters so complete as to make them a key to the rest of the work. In order then that the later portions may be well understood, it is essential that the earlier chapters be carefully studied, and their lessons thoroughly mastered with the aid of frequent examinations of the healthy larynx: diligence and perseverance being as necessary for this purpose as they are for a perfect knowledge of healthy chest-sounds as revealed by the stethoscope, or of the normal fundus of the eye by the ophthalmoscope. The student may further perfect himself by adopting one of the methods of autolaryngoscopy. Although these chapters are not very long, it is believed that no necessary detail is omitted.

The chapters on Semeiology and General Therapeutics are also given very fully, and unless these be carefully studied, the importance of the references to differential symptomatology and treatment of the various diseases cannot be appreciated.

Histories of cases in detail have been purposely excluded, the author being of opinion, that, when read, which is seldom, they are but very rarely of

service to the student. Clinical study, as the name implies, can only be efficiently pursued in the presence of the patient. The author has endeavoured to frame a guide to diagnosis of the more ordinary diseases of the throat which may occur in practice, and to lay down lines for treatment which, in his experience, have been successful; but he feels it necessary to warn his readers not too readily to apply to individual cases what is intended for general instruction.

Pictorial illustrations of disease as revealed by the laryngoscope are believed to be essential to any work intended as a practical guide to the student of laryngology.

The illustrations of the present volume have all been taken from nature, and have been placed on stone by the author himself. Two plates are photographs in autotype of his original drawings. Being intended as types of the various diseases described in the text, all accidental differences of portraiture are, for the sake of simplicity, omitted.

In the first plate of the normal laryngeal image every variety and form of healthy larynx is figured, but afterwards, in plates illustrative of disease, only those points which are departures from the normal are indicated, and a type is taken all through of the most usual form of larynx,—that seen in figs. 1 and 2 of Plate I. The illustrations are arranged with especial regard to more convenient reference during study of any portion of the text than is usually possible. They can be opened out so as to lie beside the page descriptive of the disease each drawing delineates.

Wood-engravings, almost all of which are original,

have been inserted where necessary. Only those instruments found of value in the author's own practice are figured. They are all drawn to scale, so that the illustrations may be made available as working drawings.

Reference to other authors is not given, except where originality of research is involved, or where the author's experience differs from that of acknowledged authorities; but a short bibliography will be found at the end of the work.

A full list of formulæ is also appended, reference being made to it in the text by numerals corresponding to those affixed to the formulæ.

CHAPTER I.

THE LARYNGOSCOPE, AND HOW TO USE IT.—THE RHINOSCOPE.

IT is extremely difficult, by a mere verbal description, to explain clearly any process requiring technical apparatus and skill, and one practical lesson is of more value than a dozen pages of written directions.

The author's desire, however, is to make laryngoscopy intelligible to those who are unable to avail themselves of personal instruction, and this will probably be best done by enumerating and describing, somewhat dogmatically, the steps to be taken in making a laryngoscopic examination. The most probable causes of failure will then be pointed out, with directions how to avoid those which depend on the observer, and to overcome those which are due to obstacles pertaining to the patient; pursuing thus precisely the same course as if personally instructing a pupil at hospital.

Before proceeding, however, to describe the method of using the laryngoscope, it may be as well to give a brief account of the instrument itself.

Strictly speaking, the laryngoscope consists of but one instrument,—namely, a small mirror, which, when placed at the back of the mouth, previously illumined either by solar or artificial light, reflects the image of

the cavity of the larynx, and of more or less of the trachea.

The illumination of the fauces may be effected by either direct or indirect light. The majority of practitioners examine by the aid of indirect, or reflected light, and for this purpose a second mirror is required. Laryngoscopy, then, as usually practised in this country, involves the use of two mirrors, one to concentrate and reflect the illuminating rays on to the fauces, and the other to throw the light thus reflected into

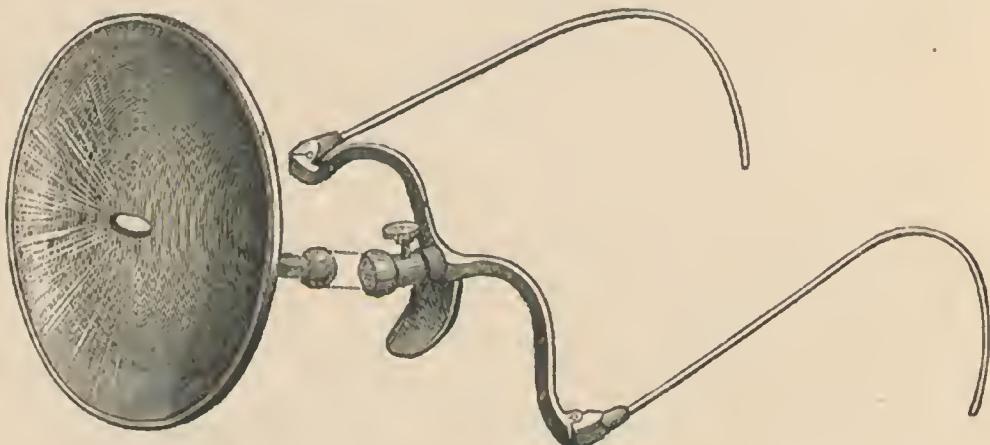


Fig. A.—LARYNGEAL REFLECTOR (half measurements).

the larynx, the image of which it in turn reproduces.

These two mirrors are called the *Reflector* and the *Laryngeal Mirror* respectively. The author will simply describe the means and method of examination which he himself is in the habit of practising, without entering into minute details as to differences in practice, by no means essential, of various laryngoscopists.

The *Reflector* (Fig. A) is a circular mirror, about three and a half inches in diameter, perforated with a small hole in the centre, and fixed by a ball-and-socket

joint to a kind of spectacle-frame, the lower rims of which have been removed.* This is supported on the bridge of the nose by a plate of tolerably soft metal, which can be adapted to the individual examiner. This instrument, first devised by Duplay, will be found much less fatiguing for long-continued use than that of Mackenzie and Semeleider, which clips the nose like ordinary spectacles. The removal of the lower, instead of the upper rim, is also an advantage, as the lower rim is sometimes apt to come into the field of vision. Prac-

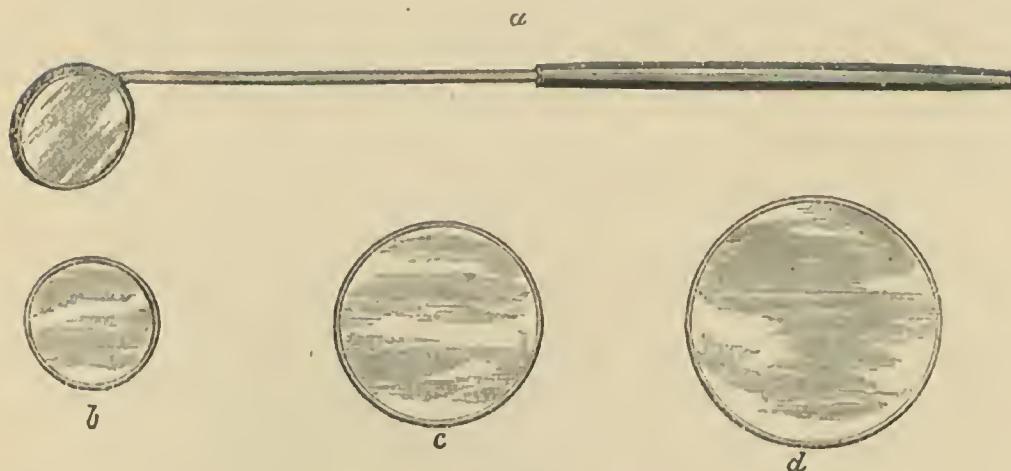


Fig. B.—THE LARYNGEAL MIRROR.

a, The mirror (half measurements).
b, c, d represent exact size of the reflecting surface of mirrors of varying dimensions.

titioners who are shortsighted can easily have suitable glasses fixed into this frame. The reflector, if for use with artificial light, should be slightly concave, with a focal distance of from eight to fourteen inches, and it is important that practitioners should ascertain the focal distance of a reflector before buying one, in

* This instrument, and all others figured in the book, are made according to the author's patterns by Messrs. Krohne & Sesemann, 8, Duke-street, Manchester-square.

order that they may adapt it to their own vision, whether long or short, and may also know at what distance their head should be from the patient, so as to obtain a proper disc of light.

The **Laryngeal Mirror** (Fig. B) is circular in shape, made of glass backed with quicksilver or amalgam, set in a German-silver frame, and attached at an angle of 120° to a slender shank of the same metal about three and a half inches in length: this shank is further fitted into an ebony or ivory handle four inches long.

The mirrors are about one-twelfth of an inch thick, and are made in three varying sizes, the diameters being half an inch, four-fifths of an inch, and one inch respectively.

With regard to the light, it is almost essential in our treacherous climate to have recourse to artificial illumination, sunlight being so rarely available. Of the various forms of artificial light, that afforded by gas is, for constant use, on all accounts the best, and no lamp can be more complete than the universal rack-movement apparatus. The author has, however, until recently, used a lamp (Fig. C), the light of which is in every respect similar to that of the rack-movement lamp, but the apparatus of which is constructed on the principle of the Queen's reading-lamps. This form of lamp is not only much less expensive than the rack-movement, but it can be attached to an ordinary gas-burner by an elastic tube, and can be adapted for ophthalmoscopic examination or used as an ordinary study light.

Where gas cannot be obtained, any lamp, such as a Moderator, Queen's, Paraffin, or Duplex, which gives a bright steady light, will answer the purpose, and by

a practised laryngoscopist a good image may be obtained, even with a candle in a bull's-eye lantern, or a carriage-lamp. A very good form of portable lamp

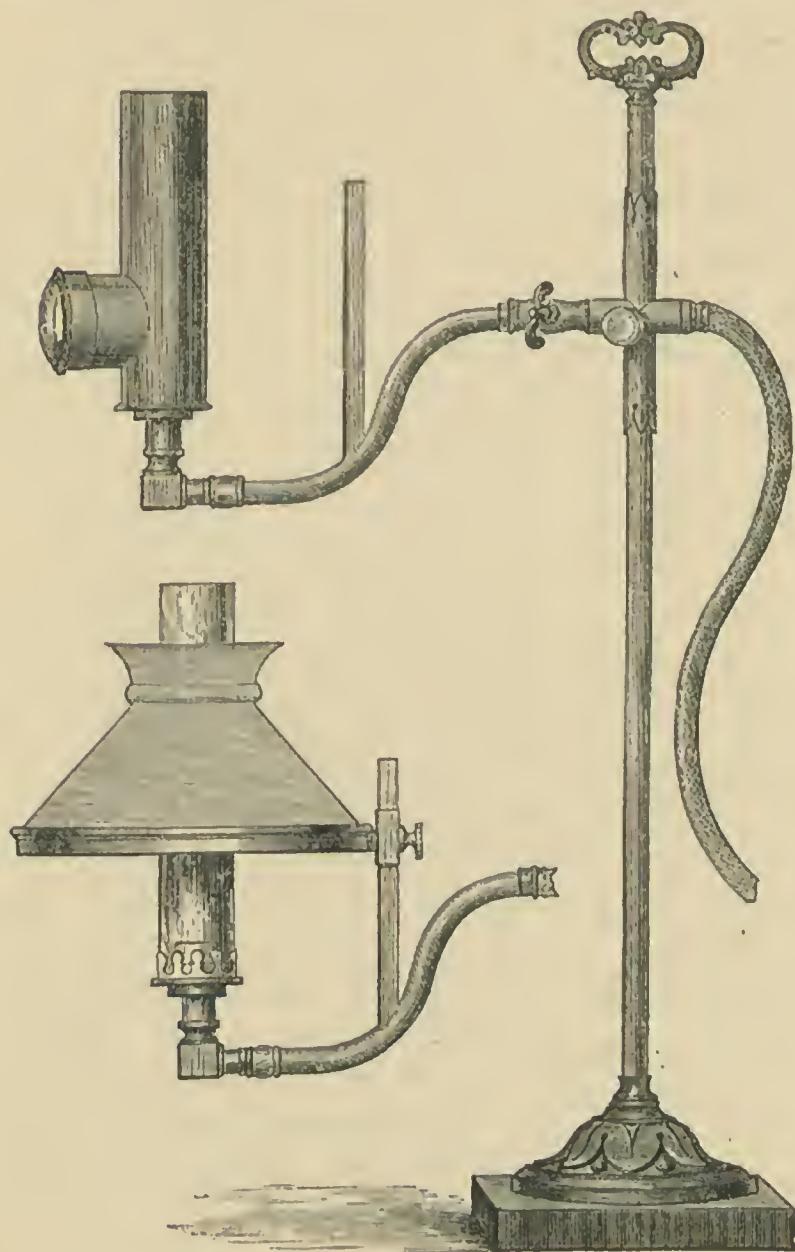


Fig. C.—A CONVENIENT STANDARD GAS LAMP, with Argand Burner, which can be attached to any gas-jet, and can be used for various purposes.

is that described by Dr. Macnaughton Jones in the *Medical Press and Circular*, February 21st, 1877.

Dr. George Johnson's pocket condenser is invaluable for country practitioners; but in the absence of a condensing lens a piece of white paper placed behind a lamp or candle will add considerably to the brilliancy of the light.

The principle on which the art of laryngoscopy is based is simply that of the well-known optical law, that when a ray of light falls on a plane surface the angle of reflection is equal to the angle of incidence (Fig. D). Thus the light (L), being thrown from the reflector (R) on to the laryngeal mirror (M),

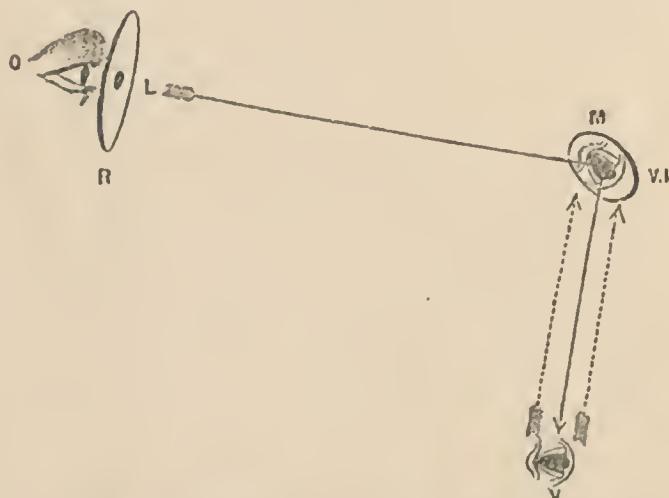


Fig. D.—DIAGRAM ILLUSTRATING THE PRINCIPLE OF THE LARYNGOSCOPE.

placed at the back of the mouth, illuminates the larynx (v), and, by a reduplication of the same law, the image (v.i) of the illuminated larynx is reflected on to the laryngeal mirror, and may there be seen by the observer (o). It is important to remember that this reflected image is laterally symmetrical of the object, and not reversed; that is to say, what is right and left in the larynx of the patient remains right and left in the mirror. At the

same time it must of course be remembered that the patient's right corresponds with the observer's left, and *vice versa*. The only inversion which takes place is in the antero-posterior direction, the epiglottis, which, in the patient's larynx is in front, nearest to the observer, appearing at the upper part of the mirror, whilst the posterior part of the larynx appears in the lower part of the mirror. The relative horizontal levels of the different parts are well preserved: the epiglottis is seen to be on a higher plane than the arytenoid cartilages, and the ventricular bands are observed above the vocal cords. As far as observation is concerned, then, the apparent antero-posterior inversion is literally of no importance, but it must be carefully remembered when introducing a brush or other instrument into the larynx.

With regard to the furnishing of a room for laryngoscopy very little is required. The author's own room is arranged as follows:—A small-seated moderately hard chair, with an upright back, is fixed to the floor and against the wall, for the patient: in front of this is an ordinary chair or music-stool for the observer. On the left of the patient's chair is a pedestal table, with the examining-lamp, a carafe of water and a tumbler, and on the right a spittoon vase. The table is constructed with drawers for tongue-cloths, instruments, &c. It will be seen, from the simplicity of these arrangements, that laryngoscopic examinations may be made in any room: one thing is to be remembered; viz., so to place the patient that the daylight from the window and the reflected light may not be in antagonism.

To make a laryngoscopic examination the following steps must be taken in the order named :—

1. Direct the patient to sit erect, with the knees together and the head slightly thrown back.
2. Arrange the lamp so that it is distant about nine inches to the left of the patient's head, and in a line with his ear.
3. Sit opposite the patient, and adjust the reflector so that the right eye looks through the central perforation. (By this arrangement *both* the observer's eyes are screened from the glare of the light, which is not the case when the reflector is worn in the centre of the forehead.)
4. Direct the patient to open the mouth widely.
5. Throw the reflected light on to the back of the fauces, according to the focal distance of the reflector.
6. Take the laryngeal mirror in the right hand,* and slightly warm it over the lamp, to prevent its being dimmed by the moisture of the patient's breath. Test the warmth of the mirror by placing the back of it against your own hand or cheek. (It will be noticed, when holding a mirror over a lamp, that the glass becomes covered with a film of moisture, which soon clears away. The moment when this moisture has disappeared, and the mirror becomes clear, shows when the latter is at the right temperature.)
7. Direct the patient to protrude the tongue.

* Of course all these steps may be taken with the hands reversed, and such is the practice of my colleague, Dr. Llewelyn Thomas. One advantage of holding the mirror always in the left hand is, that when the right is required for operative measures, the laryngeal mirror can be held in the opposite hand without any sense of awkwardness. In this, however, as in all surgical procedures, the observer should be ambi-dextrous.

8. Gently draw the same forward with the left hand, previously enveloped in a small cloth or napkin, holding the organ between the thumb and index finger, the former being uppermost (Fig. E).

9. Holding the mirror like a pen in the right hand, introduce it into the patient's mouth with the reflect-

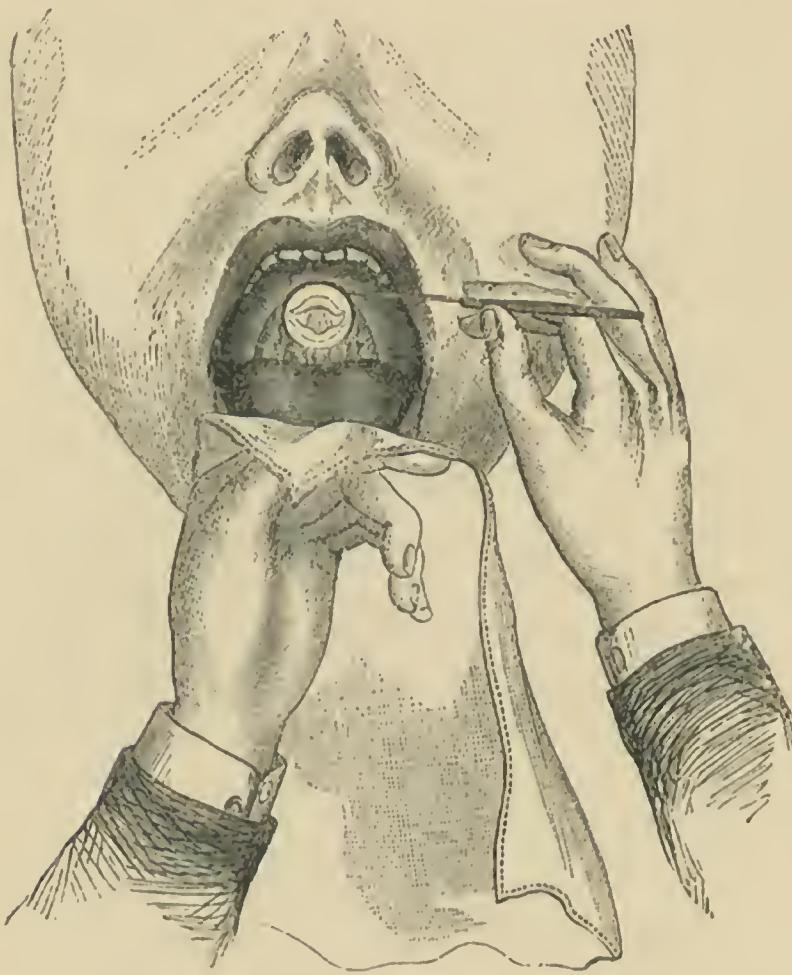


Fig. E.—POSITION OF OBSERVER'S HANDS IN MAKING A LARYNGOSCOPIC EXAMINATION.

ing surface directed downwards, and rest its back gently against the uvula (Fig. E).

10. Turn the hand slightly towards the patient's left, so as to keep it out of the line of view.

11. Direct the patient to take a deep inspiration, and then to utter the sounds ah, ur, eh, or ee.

A view of the larynx should thus be obtained (Fig. E), and the vocal cords, which are easily recognizable by their pearly colour, should be seen separating on inspiration and approaching on phonation.

There are, however, frequently certain difficulties in the way, in making a laryngoscopic examination, and they may be divided into two classes,—those due to the observer, and those pertaining to the patient.

The observer should constantly bear in mind the motto, "Arte non vi." He must not, because at first he sees only the base of the tongue or the upper surface of the epiglottis, at once make up his mind that the patient before him is one of those in whom it is impossible to obtain a view of the larynx. On the contrary, he must examine this same patient carefully each day until he succeeds; for it cannot be too strongly insisted on that the proportion of cases in which a skilled laryngoscopist is unable to obtain a satisfactory picture in the laryngeal mirror is *very small indeed*. Attention to the following cautions may obviate failure:—

- A. Be careful that the light is thoroughly well reflected, and learn to keep the disc of light *steadily* directed on to the fauces.
- B. In holding the tongue, grasp it firmly but *gently*, and do not draw it down on the teeth, so as to hurt the frænum or otherwise give pain. If the tongue has any tendency to be elevated at the dorsum, it is worse than useless to pull at it, as the contraction is thereby only increased.

In such cases a better view may occasionally be gained by directing the patient to hold his own tongue, or by allowing the tongue to be kept within the month.

- C. Be very careful, after warming the mirror, to test its temperature on the back of the hand or cheek, lest it be so hot as to be disagreeable to the patient.
- D. Be careful not to touch the tongue with the mirror when introducing it.
- E. Press the uvula very gently upwards and backwards, but do not force it against the posterior wall of the pharynx, or retching and gagging will immediately ensue.
- F. When the mirror is introduced, adapt the exact angle to the relation which the plane of the larynx bears to the position both of patient and observer, and do not too quickly decide, that because at first only the epiglottis or the posterior commissure is seen, therefore an image of the rest of the larynx is unattainable.
- G. Let each examination be very short, especially on the first occasion of seeing a patient. The mirror may then be introduced six or eight times without producing spasm or nausea, whereas if the mirror be too long retained, irritation of the fauces will frequently be produced, and all efforts at further examination will, for that occasion at least, be unsuccessful. Besides the annoyance this will cause the observer, there is the fear that the patient may lose confidence and be unwilling to submit to further examination or treatment.

The difficulties on the part of the patient are either mental or physical: of the mental the chief is the apprehension that the instrument will hurt; therefore—

H. Take the trouble, especially with children and female patients, to explain that the process is simply a method of *examination*, and that it is in no sense an operation.

I. Wherever apprehension or timidity exists on the part of the patient, it is often well to introduce the mirror gently into the mouth once or twice, and to quickly withdraw it, before any real attempt is made to examine the larynx.

Intolerance of laryngoscopy is rarely due to any physical cause on the part of the patient, but is almost always the result of nervousness. It may, however, be caused by the disease under which the patient labours; for example, a patient suffering from simple congestion or relaxation of the mucous membrane, or from phthisis, is more intolerant of anything touching the uvula or posterior wall of the pharynx than is a patient suffering from syphilitic disease. In chronic granular hypertrophy of the vault of the pharynx there is reflex irritation, which produces spasm, retching, and gagging. In almost all affections of the motor nerves of the larynx there is some co-existent diminution of sensibility; and few cases present less difficulty in the way of satisfactory laryngoscopic examination than that of a patient suffering from functional aphonia.

Of all artificial methods of reducing intolerance of laryngoscopy none is better than to cause the patient to suck small pieces of ice for a few minutes. Dr. R. C. Brandeis, of Louisville, has brought under the author's

notice a simple instrument which he calls the "Throat Educator." It consists of a piece of vulcanite shaped to the curve of the laryngeal mirror, which the patient is frequently to introduce into his throat, so as to diminish his sensitiveness to instruments; but the writer must fain boast of never yet having met with cases in which such a measure was necessary. The gentle hand and encouraging word will, in his experience, do more than any other training. All mechanical appliances for holding the uvula or for fixing the patient, invariably act as hindrances rather than as aids to the observer.

The difficulties due to the conformation of the larynx itself, and the best methods of overcoming them, will be treated of in the description of the laryngoscopic image in the third chapter.

Rhinoscopy is to all intents and purposes the same process as laryngoscopy, except that the laryngeal mirror is turned upwards to obtain a view of the posterior nares, and is, when used for this purpose, called the *rhinal* mirror. Rhinoscopy is a more difficult process than laryngoscopy, inasmuch as more causes of failure, due to natural conformation of the parts, enter into consideration, and prevent a satisfactory rhinoscopic image from being obtained. Of these the following are the principal:—

- α. Irritability of pillars of fauces, and of posterior wall of the pharynx.
- β. Enlarged tonsils and uvula.
- γ. Insufficient distance between the uvula and posterior wall of the pharynx.

In laryngoscopic examination, as has been pointed out, it is not necessary to touch the pharynx or fauces,

but in using the rhinal mirror it is not often possible to avoid doing so. The third difficulty is the greatest, and to overcome it many instruments have been suggested to draw the uvula forward, and so to increase the area open to inspection. Better than any mechanical method, in the author's experience, is for the observer to direct the patient to sit with head inclined rather more forward than is necessary for laryn-



Fig. F.—CURVE OF SHANK OF MIRROR, AND POSITION OF HAND NECESSARY FOR RHINOSCOPY.

goscopy and to continuously breathe out through the nostrils during the examination.

The steps necessary to take in making a rhinoscopic inspection are exactly the same as for the laryngoscopic up to No. 6; but the mirror used must be of the smallest size in Fig. B, and should be curved so as to take the shape of the floor of the mouth (Fig. F). Then to continue:

7. Allow the patient's tongue to remain at rest and untouched in the mouth.

8. Holding the mirror like a pen in the right hand, introduce it into the patient's mouth with the reflecting surface upwards, allowing the shank to rest lightly on the anterior or middle of the tongue, so that its reflecting surface is about at right angles to

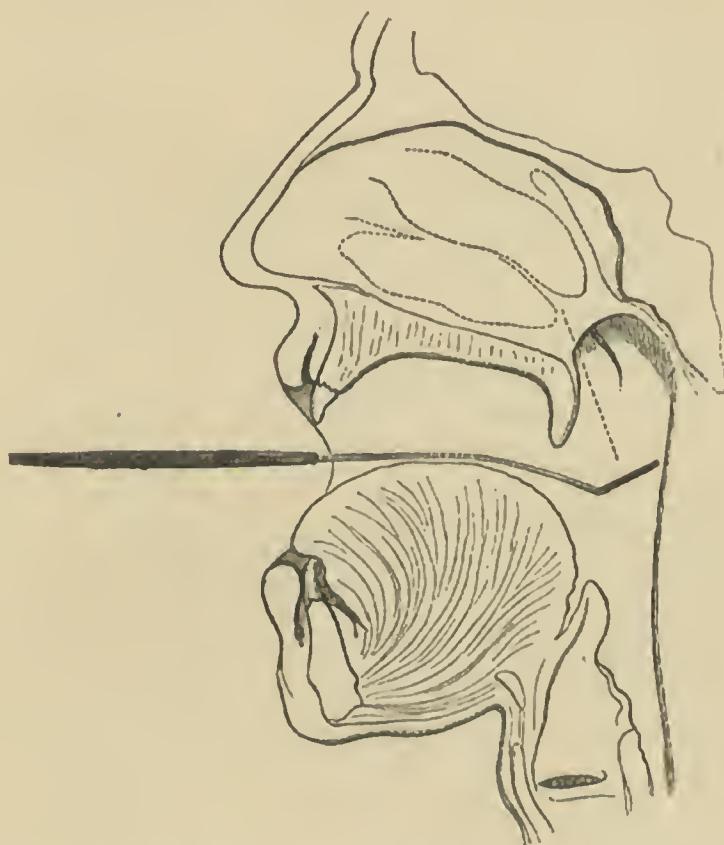


Fig. G.—SECTION SHOWING POSITION OF MIRROR AND PATIENT'S HEAD FOR OBTAINING A RHINOSCOPIC IMAGE.

the back wall of the pharynx. Be very careful not to touch the base of the tongue (Fig. G). Shift the mirror slightly to right or left of the uvula, according to which side it is desired to examine.

9. Direct the patient to exhale quietly and continuously by the nostrils.

A view of the posterior nares should thus be obtained: the various portions which may be visible will be described in the account of the rhinoscopic image (page 37).

The anterior nares can always be examined by means of some simple dilating instrument. The tri-valve speculum (Fig. H) of Elsberg, to which has been added a rack to keep it open at any desired

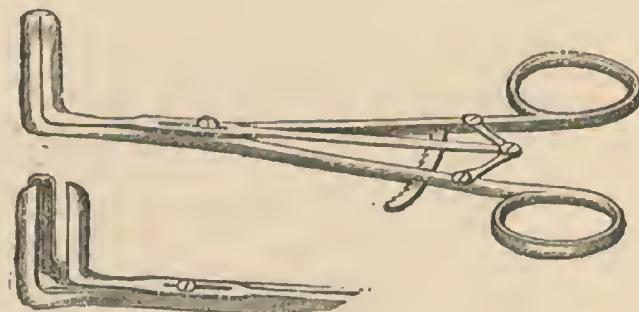


Fig. H.—ELSBERG'S TRI-VALVE NASAL SPECULUM, WITH AUTHOR'S RACK-MOVEMENT (half measurements).

width, is the best. Digital examination of the posterior nostrils is of the highest value, when the result of a visual inspection is unsatisfactory. It is, however, necessary for this purpose that the observer should thoroughly know the relative normal position, and sensation to touch, of the parts.

CHAPTER II.

ANATOMY OF THE LARYNX.

ALTHOUGH it is beyond the scope of this work, written as it is for advanced students and practitioners of medicine, to discuss in detail the anatomy and physiology of the larynx, some brief account of its structure and uses is essential to a right comprehension of the laryngoscopic image, as well as of the changes made by disease both in tissue and function, as viewed with the laryngeal mirror.

The **Larynx** is a box composed of cartilages connected together by ligaments and membranes, and acted upon by various muscles. Commencing at the base of the tongue, it extends downwards as far as the trachea, constituting the first portion of the respiratory tract, and containing the organ of voice.

Anteriorly it is almost subcutaneous, and forms the well-known prominence called Adam's apple: on each side of it lie the great vessels of the neck, and its posterior wall forms the anterior boundary of the pharynx. In shape this voice-box is irregularly triangular, the apex being in front, the base behind. It is open below and above. Below it is continuous with the trachea, and above it opens into the pharynx, its aperture in this direction being closed by a kind of movable lid,—the epiglottis.

The larynx is constructed of four cartilages,—the thyroid, cricoid, and two arytenoid; one principal fibro-cartilage, the epiglottis; and four smaller fibro-cartilages, those of Wrisberg and of Santorini, two of each. These latter are of little practical importance, being, as it were, merely supplementary to the arytenoids. Luschka further describes, as occasionally present, two sesamoid cartilages surmounting those of Santorini. The four first-named cartilages are liable to ossification as the result of age or disease, but the epiglottis and other fibro-cartilages never undergo this process.

The **Thyroid** cartilage (*θυρεός*, a shield) is the largest of the laryngeal cartilages, and is well named as the shield of the voice-box, containing and protecting as it does the essential parts of the vocal organ,—the vocal cords. Composed of two alæ or wings, which, uniting anteriorly to form a ridge, expand outwards and backwards, the thyroid cartilage forms the two lateral walls of the larynx: it has two superior horns or cornua, which are connected with the hyoid bone by the thyro-hyoid ligaments; and the thyro-hyoid membrane extending between the cornua serves to still more closely connect these two structures. The epiglottis is attached to the interior of its superior margin by the thyro-epiglottic ligament, while inferiorly the thyroid and cricoid cartilages are connected by that most important surgical structure, the crico-thyroid membrane. Two inferior cornua of the thyroid are further united to the cricoid by capsular ligaments lined with synovial membrane; while to the arytenoids the thyroid is united by the vocal cords and by the thyro-arytenoid muscles.

The **Cricoid** cartilage receives its name from its

ring-like form (*κρικός*, a ring). It is narrow anteriorly, but broad behind. Forming the support of the voice-box, it is the capital of the column of the windpipe, to which it is connected by fibrous tissue; and in addition to its union with the thyroid above mentioned, it presents on its posterior and superior aspect two broad cupshaped articular facets, on which rotate the arytenoid cartilages. The cricoid cartilage marks the level of commencement of the oesophagus, and is surgically interesting from the fact that its posterior surface offers the only point of resistance in the anterior part of the gullet, and is a favourite seat of malignant ulceration.

The Arytenoid cartilages are pyramidal in form, and when united bear some resemblance in shape to a pitcher (*αρυταινά*): situated at the back of the larynx, they articulate at their bases with the cricoid, and give attachment at their angles to the vocal cords. The arytenoid cartilages are connected with the epiglottis by the aryteno-epiglottidean or aryepiglottic folds, and with the thyroid (in addition to the union formed by the vocal cords) by the thyro-arytenoid ligaments (ventricular bands, or false vocal cords).

The **Epiglottis** is a thin leaf of fibro-cartilage, continuous with the base of the tongue, with which it is connected by three ligaments,—one median and two lateral glosso-epiglottic folds, and attached to the inner surface of the superior notch of the thyroid cartilage by the thyro-epiglottic ligament.

During respiration the epiglottis remains erect; during vocalization it moves more or less, and during deglutition it closes firmly on the laryngeal orifice.

Besides its attachment to the tongue, thyroid, and arytenoid cartilages, it is united to the hyoid bone by the hyo-epiglottic ligament.

So much for the framework of the larynx. Internally it is lined by mucous membrane continuous with that of the mouth and pharynx, and covered with epithelium, which is of the ciliated variety, except at the upper portion, where it is squamous. The laryngeal mucous membrane is studded with numerous muciparous glands, which exist in especially large numbers on the epiglottis, the ary-epiglottic fold, and the inner surface of the sacculus laryngis, while on the vocal cords none are found. Heitler (Stricker's "Medizinische Jahrbücher," vols. iii. iv.) has found adenoid tissue in the healthy human larynx, particularly in the ary-epiglottic folds, and in the mucous membrane covering the arytenoid cartilages.

The cavity of the larynx is divided into three compartments; the first and largest (supra-glottic) is that which lies above the ventricular bands, and is heart-shaped, the broader part being situated anteriorly, and corresponding to the line of the epiglottis, and the lateral walls being formed by the folds connecting the epiglottis with the arytenoid cartilages.

The second, or glottic division, is that part which comprises the ventricular bands, the vocal cords, and the space (ventricle of Morgagni) between them.

The third, or infra-glottic division, is that portion of the larynx extending from the inferior surface of the vocal cords to the lower border of the cricoid—the beginning of the trachea. The second division of the larynx is, physiologically as well as medically, the most important of the three, for not only by the action of air expired from the lungs on to the vocal cords is vocal

sound actually produced, but these same vocal cords play a prominent part in the function of respiration. This narrow orifice may well be termed "the portal of the breath of life." Scientifically, it is called the **Glottis**, or more correctly, **Rima Glottidis** (chink of the glottis), since it should be remembered that the term "glottis" refers rather to one of the vocal cords, bands, lips, or tongues themselves, than to the space between them. The rima glottidis in repose is more or less elliptical in shape (see fig. 92, Plate X.), longer in the male than in the female, measuring nearly one inch in the



Fig. J.

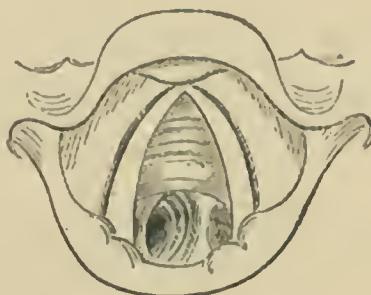


Fig. K.

Fig. J.—OUTLINE VIEW OF THE LARYNX as seen in phonation.

Fig. K.—THE SAME in full inspiration, and showing the bifurcation of the Trachea.

former and two or three lines less in the latter. The form of the rima glottidis varies greatly in different actions of the cords, being almost closed in the production of certain vocal notes (Fig. J), while in full inspiration its form is triangular (Fig. K), the apex being anteriorly at the thyro-arytenoid angle, whence the vocal cords arise (anterior commissure of the vocal cords); the two posterior angles at the arytenoid cartilages, where the same cords are inserted, and the base being formed by the space between these cartilages (interarytenoid space, or posterior commissure of the vocal cords).

The **Vocal Cords**, bands, tongues, or lips, as they

have been variously called, are composed of yellow elastic tissue, covered with a thin layer of mucous membrane, and have the power of lengthening and contracting. It is open to doubt whether physiologists have sufficiently explained the many variations of vocal sounds, by the mere difference in the length of the cords, and it is probable that the power of lengthening and shortening of the tube itself from the cricoid cartilage upwards (not forgetting the shutting off of the posterior nares in the so-called head notes) plays an important part in the production of different notes. However this may be, we all know that vocal sound is produced by vibrations of air exhaled from the lungs on the vocal cords. We know also that the cords separate and approach in inspiration and ex-spiration, and therefore anything which affects the free movement of these cords will likewise affect the voice and frequently also the respiration.

Any loss of tissue in, or new growth upon, the epiglottis will cause embarrassment in deglutition. Both deglutition and respiration may also be affected by external mechanical pressure. It is astonishing how much displacement of the larynx may take place without embarrassment of either voice, deglutition, or respiration; but if there is the slightest constriction, as in those forms of goitre, the lateral lobes of which embrace and compress the larynx and gullet, dyspnoea, and later dysphagia, become prominent and distressing symptoms.* If the nerves supplying the

* This interesting question has been illustrated by various specimens exhibited by the author at the Pathological Society (vols. xxv. and xxvii.); and also by a short paper entitled "On the Causation of Dyspnoea in Sustocative Bronchocle," which appeared in the *American Journal of the Medical Sciences* for April, 1877, and which was

intrinsic muscles of the larynx are injured, both vocalization and respiration are impaired; and further on it will be seen how numerous may be the causes which affect the action of the vocal cords. We have at present only to treat of their functional movements, which are regulated by certain muscles. Of these it will be sufficient to enumerate those known as the intrinsic muscles of the larynx, and to indicate their actions; their situation and attachments being sufficiently marked by their names. They consist of the crico-arytenoidei postici (two), separators or abductors of the vocal cords, acting in inspiration; crico-arytenoidei laterales (two), and the arytenoideus (one), adductors of the vocal cords, causing them to approach in ex-spiration or phonation; the crico-thyroidei (two), tensors or elongators of the vocal cords; the thyro-arytenoidei (two), shorteners or relaxers of the vocal cords.

The arteries which supply blood to the larynx are branches derived from the superior and inferior thyroid, the former of which is a branch of the external carotid and the latter of the thyroid axis from the subclavian.

The nerves of the larynx are the superior laryngeal and the inferior or recurrent laryngeal, both branches of the pneumogastric, and a few filaments from the sympathetic. The mucous membrane of the larynx and the crico-thyroid muscles are supplied by the superior laryngeal, and the remaining muscles by the recurrent laryngeal, the arytenoideus receiving filaments from both.

suggested by perusal of a graphic report of a case of Suffocative Bronchocle, by Dr. John B. Roberts, of Philadelphia, printed in the same Journal for October, 1876.

CHAPTER III.

THE LARYNGOSCOPIC IMAGE (Plate I.).

THE RHINOSCOPIC IMAGE (Plate V.).

THE Laryngoscope reveals to us, as has been already said, an image of the interior of the larynx, which we have divided, for practical purposes, into

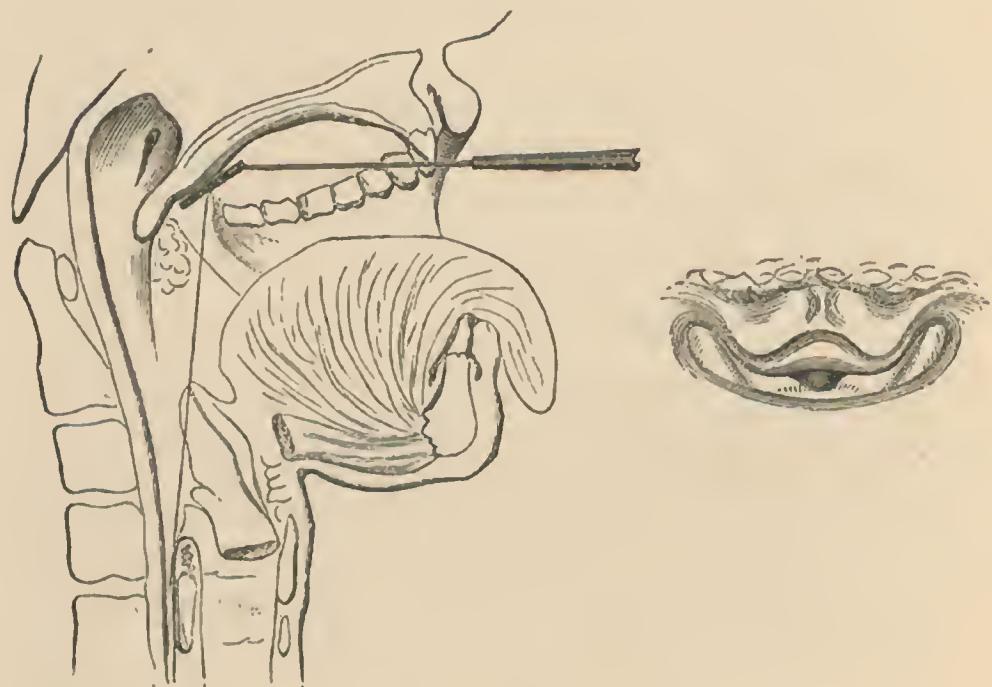


Fig. L.—SECTIONAL VIEW, showing the position of the head of the patient, and of the laryngeal mirror, which will give the minimum amount of view. The laryngoscopic image in such a case is represented in the smaller figure.

three compartments,—the first, or supra-glottic; the second, or glottic; and the third, or infra-glottic,

taken in order respectively from above downwards. In looking at the reflection in the laryngeal mirror of a typically healthy larynx (Plate I. fig. 1), all the three divisions may, on deep inspiration, be seen; but, in not a few instances, the beginner will see only the epiglottis, and, perhaps, the arytenoid

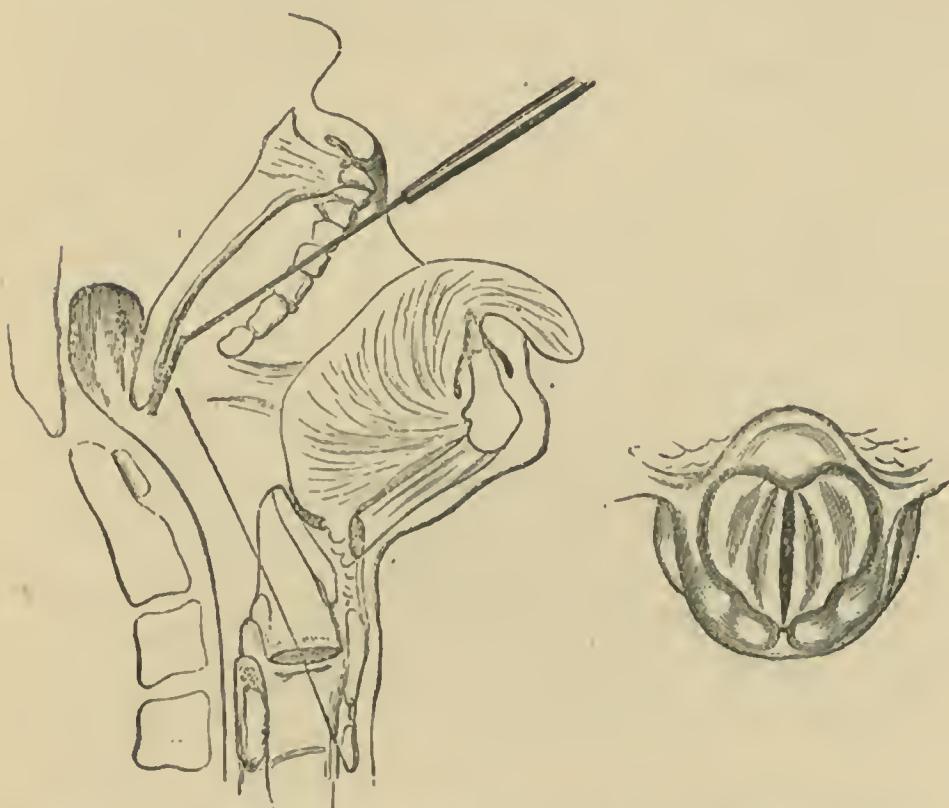


Fig. M.—SECTIONAL VIEW, showing the position of the head of the patient, and of the laryngeal mirror, which will give a full amount of view. The laryngoscopic image in such a case is represented in the smaller figure.

cartilages. This may arise either from the fault of the observer, who has not sufficiently followed the directions, or recognized the cautions given in the first chapter, or from the fact that the epiglottis is really so situated as to practically obstruct the view.

The accompanying woodcuts (Figs. L and M) show

the two extremes of the views which will be obtained, according to the angle of the mirror with the perpendicular plane of the larynx, and also to the horizontal level at which the mirror is placed in the throat.

Before entering minutely into the appearance presented by each structure when reflected in the mirror, Plate I. should be carefully studied, especially the two first figures, in order that the reader may become perfectly familiar with what should be observed in the living subject. The laryngeal image will be seen to be circular in shape (though this, of course, would vary with the shape of the mirror employed) and to be bounded by well-defined walls, as would be expected at the opening of a tunnel like the larynx. The epiglottis will be seen to be attached to the base of the tongue, forming the anterior arch of the tunnel, and occupying the foremost and uppermost position in the plane of the larynx. From each side the folds connecting this valve with the arytenoid cartilages complete the circle, and in the folds may be seen the prominences of the arytenoid and their supplementary cartilages. On a lower plane are the two ventricular bands, reduplications of the mucous membrane of the larynx, containing at their free edge the thyro-arytenoid ligaments. These form the floor of the first or supra-glottic division of the larynx. At first sight the ventricle shows only as a dark line between the ventricular bands, forming its superior, and the oval ends forming its inferior boundary; but on turning the mirror so as to get a lateral view of one or other side of the larynx, the open space of the ventricle will be seen to be much larger than it appears when looking directly down the centre of the larynx, as is done with

the usual position of the mirror (Fig. N). It will be further seen that, by muscular action, this space varies in shape and size in different movements of the larynx.

Below this is seen, standing out in bold relief, the superior surface of the vocal cords, which glisten like mother-of-pearl, and move to and fro with respiration and phonation. Beneath the vocal cords are seen less completely the contents of the third or infraglottic region. A portion of the cricoid cartilage will be observed, then some rings of the trachea, and further on, in rare and favourable cases, the bifurca-

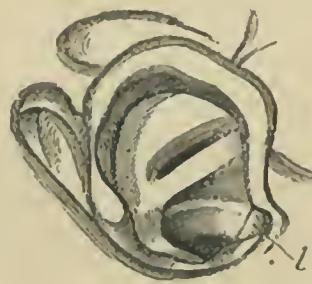


Fig. N.—A SIDE VIEW OF THE LARYNX, showing the right ventricle of Morgagni open. *l*, Left vocal cord.

tion of the trachea, the right bronchus being uppermost, and therefore most visible. Outside the larynx are seen the hyoid fossæ and the anterior border of the pharynx.

Let us now more minutely examine, by means of Plate I. (which should be opened out so as to lie beside the page), each of the structures thus seen on a general view of the larynx. It may as well be mentioned that in this plate no attempt has been made to reproduce the exact colour of the mucous membrane, as this

varies considerably in different individuals, just as may their complexion, and also according to the kind of light employed; such as sunlight, oxyhydrogen, common gas, or oil lamps.

The Epiglottis is in all cases the first object a reflection of which is seen in the laryngeal mirror, and appears as a leaf-like piece of fibro-cartilage connected to the tongue by three glosso-epiglottic folds; viz., two lateral (LGEF, fig. 1), and one superior (SGEF, fig. 7). Attaching it to the inner portion of the thyroid cartilage, just above the anterior commissure of the vocal cords (AC, fig. 1), is seen the thyro-epiglottic fold (TEF, fig. 2), to the pharynx the two pharyngo-epiglottic folds (PEF, fig. 1), and to the arytenoid cartilages the two ary-epiglottic folds (AEF, fig. 1). In some instances the sulci (anatomically termed valleculæ) are seen in the mirror on the upper surface of the epiglottis. They are situated on each side of the median line, close to the base of the tongue, and they are bounded by the superior and lateral glosso-epiglottic folds (figs. 4, 7, and 11). These sulci are surgically important as being not uncommonly the seat of origin of specific and also of malignant ulceration.

The amount of the epiglottis visible in the mirror will depend greatly on the length and amount of tension of its various ligaments; though, as has been said, it will also vary according to the position of the mirror. For example, there may be seen at one and the same time portions of the superior surface (SSE, fig. 1), of the inferior surface (ISE), of the cushion (CE), and of the free edge or lip (LE, fig. 2). The epiglottis may vary greatly in shape: it may be of the ordinary curve, and show a portion of both the superior and

inferior surfaces, as in figs. 1, 2, and 11; it may be so pendulous as to show but little or nothing of its inferior surface, as in figs. 5, 7, 8, and 9; it may be angular, as in fig. 3; folded on itself, as in fig. 4; with lip but slightly everted and doubly curved, as in figs. 5 and 11; with serrated or obtusely crenated edge, as in fig. 6; or asymmetrical, as in fig. 9: lastly, it may show none of its superior surface, but stand quite erect, as in fig. 10.

The epiglottis may be looked upon as the distinctive feature of the larynx; for no part is so variable in shape and size; and it thus entirely controls the individuality of the organ. This is not surprising, because, as Dr. Prosser James says, "there is no more reason why the epiglottis should be uniform than that all noses should be alike."

Although it is true that the epiglottis may vary considerably in shape and size, and yet not materially interfere with the view, as is seen in figs. 1, 2, 3, 6, 8, 10, and 11; yet, in by far the majority of cases, the configuration of the epiglottis regulates the amount of the larynx visible in the mirror. In fig. 4, for example, its peculiar form prevents the posterior part of the cords from being seen; in fig. 5 little more, and in fig. 7 no more, of the larynx is visible than the arytenoid cartilages. Occasionally the papillæ of the tongue may be so enlarged, and the glosso-epiglottic folds so lax, as almost entirely to hide the epiglottis (fig. 8); and this appearance may easily be mistaken for disease of the valve itself.

In colour the epiglottis may be likened to the inner surface of the eyelids. It is of a warm pinkish-yellow, and not unfrequently the vessels may be seen ramify-

ing over its surface (figs. 5 and 6). The under surface is always of a deeper colour than the upper, the cushion itself being of a bright red.

During respiration the epiglottis remains erect; and although it moves with variations of vocal notes, it plays no direct part in the production of vocal sound. Its special office is to close tightly over the larynx during the passage of food into the pharynx. Any affection, therefore, which interferes with this movement will unavoidably affect the comfort of the patient during deglutition.

Above the epiglottis is seen more or less of the base of the tongue, with the folds of mucous membrane connecting these two parts, to which reference has been already made. Continuing the circle of the laryngoscopic image, there will be seen from each side, and from the under surface of the lips of the epiglottis, the folds of mucous membrane connecting it with the arytenoid cartilages—the ary-epiglottidean, or more shortly the ary-epiglottic folds (AEF, fig. 1). Generally, only the superior and a portion of the outer or pharyngeal aspect of these folds is visible, and from the fact that the ventricular bands (VB, fig. 1) are altogether on a lower level, their internal or laryngeal side is not seen in the mirror. In each fold may generally be observed two rounded prominences, that nearer the epiglottis being the cartilage of Wrisberg (cw, fig. 1), and that nearer the median line the capitulum of Santorini (cs, fig. 1).

The two capitula of Santorini are occasionally seen to override each other, as in fig. 10. In many cases the cartilage of Wrisberg is not seen, while in some instances a third small prominence, that of the sesamoid

cartilage of Luschka, is visible between those of Wrisberg and of Santorini (fig. 8).

Connecting the two arytenoid cartilages is the interarytenoid fold (IAF, fig. 1), forming the posterior commissure of the vocal cords (PC, fig. 2), and completing the circle of the framework of the larynx.

The **Ventricular Bands**, formerly called false vocal cords (VB, fig. 1), are expansions of the mucous membrane continuous with the ary-epiglottic folds, to which they are attached as well as to the under surface of the epiglottis itself.

At the median line the mucous membrane of this fold is reflected back, and forms the lining of the ventricle of Morgagni (VM, fig. 1), whence it again issues to cover the vocal cords, and descend into the trachea, &c. The free edge of the ventricle is somewhat curved in shape, and encloses the thin ligament (thyro-arytenoid) running from the inner surface of the angle of the thyroid cartilage, just below the insertion of the epiglottis, to the anterior surface of the arytenoid cartilage.

Occasionally, in phonation, the ventricular bands approach so near to the median line as partially or completely to hide the vocal cords, as in fig. 11; but in such a case, with the act of inspiration, the vocal cords come into view.

The colour of the ary-epiglottic folds, as well as of the ventricular bands, is that of the mucous membrane lining the cheeks, while the portion covering the cartilages may be described as having a colour similar to that of the gums.

Beneath the ventricles are seen the **Vocal Cords** (VC, fig. 1). They are at once recognized as two

lustrous fibrous cords running, when closed in phonation, almost parallel in the antero-posterior direction of the larynx, and widely separating on inspiration, the widest space being posteriorly. Springing from the angle of the thyroid, and attached to the anterior angle of the arytenoid, each cord is divided into two portions, the ligamentous or anterior, and the cartilaginous or posterior. The former is seen to be of a glistening pearly grey or white colour, while the cartilaginous part is often slightly pink, especially in the case of those who are constantly using the voice. This is an important point to be remembered, as otherwise the appearance might be mistaken for the result of disease.

It is well to notice that in some cases, on looking into the larynx, the anterior commissure is not seen, but that the posterior wall, lying in contiguity to the œsophagus, is more visible (fig. 6). In such cases it is often, but erroneously, supposed that there is thickening of the inter-arytenoid fold.

The amount of the infra-glottic division of the larynx visible in the laryngeal mirror varies considerably in different subjects. Generally will be seen the internal surface of the anterior portion of the cricoid cartilage, and two, three, or more rings of the trachea. The cartilaginous rings are of a yellowish buff colour, the interspaces of the same hue as the laryngeal mucous membrane.

Auto-laryngoscopy.—There are many modes of practising with the laryngoscope on the observer's own throat. The simplest is that of Dr. Johnson, which consists in placing an ordinary toilet mirror in the position that a patient would occupy with reference

to the light, and each step is then gone through as described at page 12, the observer reflecting the light and operating on his own throat, as seen in the toilet glass before him. Auto-laryngoscopy is of the greatest service in perfecting the beginner in steadiness and gentleness.

Some French and American physicians have a mirror so arranged that the patient can see his own larynx; but such a practice offers no advantage, and has some obvious objections.

The Rhinoscopic Image (Fig. O, and also fig. 38, Plate V.).

A view of the post-nasal passages is not only more difficult to obtain, but is less easy for the beginner to realize in detail, since the small amount visible

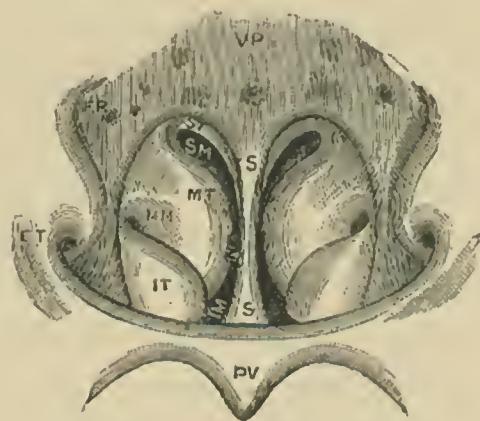


Fig. O.—THE RHINOSCOPIC IMAGE.

in the mirror at first sight may sometimes create a difficulty in identifying what is seen. It becomes necessary, therefore, to shift the mirror, and only practice will enable the observer to compare the various views, so as to form an accurate judgment of the condition of the entire cavity. The septum (s) divides

the posterior nares into two symmetrical halves, and this line is a useful guide to the relative positions of the various parts. It is pale and thin, the mucous membrane being firmly attached, and showing the bone underneath. In the space bounded by the vomer or septum on one side, and the external wall of the nostril on the other, may be observed, in their respective positions, the middle (MT), the inferior (IT), and the superior (ST) turbinated bones, the first-named being that which is most seen, the last being but very partially visible. Between the various spongy bones may be seen the three meati—superior (SM), middle (MM), and inferior (IM),—and the space between the inner boundary and the free edge of the septum is the open passage of the nostrils (NO). At the upper part of the image, above the vomer and the boundary of the nasal orifice, can be seen the vault of the pharynx (VP). The lower boundary of the posterior, and a portion of the inferior, turbinated bone is cut off from view by the posterior wall of the velum. The posterior surface of the velum (PV) and uvula is seen at a still lower level. At the lower portion, and external to the nasal fossa, slightly below the level of the middle meatus, is seen a cup-like depression with elevated ridges (the upper ridge being formed by the levator palati muscle, the lower by the ring of the tube itself),—the orifice of the Eustachian tube (ET).

The mucous membrane of the naso-pharynx is, in the normal state, generally of brighter hue than that of the lower pharynx and larynx,—an important point to remember in practice. The septum and Eustachian orifices are pale, and the turbinated bones of a pinkish grey.

CHAPTER IV.

THE GENERAL SEMEIOLOGY OF THROAT DISEASES.

IN taking a case of throat disease, after the usual questions of identity, predisposing and exciting causes, it will be well, in order to simplify matters, to classify the symptoms under the following headings:—

(A) **FUNCTIONAL** or **SUBJECTIVE**, including impairment of the functions of voice, respiration, deglutition, and, in many pharyngeal diseases, of the special senses of hearing, smell, and taste; the phenomena of cough, and the amount and character of expectoration and of mucous and salivary secretion. Pain, irrespective of exercise of function, and nervous phenomena, such as that known by the term *globus hystericus*, may be also considered under this heading.

(B) **PHYSICAL** or **OBJECTIVE**, embracing all the appearances viewed by the observer, within the throat, special reference being given to alterations in colour, form, and position.

(C) **MISCELLANEOUS** and **COMMEMORATIVE**, which include those presented on external examination, as well as those which affect the constitution generally. Here may also be included examination of the chest, of the auditory apparatus, and of the nasal passages.

The following tabulated list of symptoms will, it is thought, facilitate reference in future; each of the various classes of symptoms can then be considered in detail.

A. FUNCTIONAL OR SUBJECTIVE SYMPTOMS:—

1. Voice may be	Modified in tone, power, and endurance.
	Hoarse, husky, thick, guttural or nasal.
	Aphonic.
	Jerky.

(Articulation may be impaired irrespective of phonetic quality.)

2. Respiration may be embarrassed	Slightly, on exertion.
	Continuously.
	Spasmodically.

(Nasal respiration may be impaired or altogether obstructed.)

3. Cough may be	Irritable.	On rising.	With or without
	Hacking.	After exertion.	expectoration or haemorrhage.
	Painful.	After meals.	
	Paroxysmal.	On change of temperature.	
	Continuous.		

Its phonetic character may vary.

4. Deglutition may be	Difficult	Varying with consistency and temperature of food.
	(<i>Dysphagia</i>).	
	Painful	
	(<i>Odynphagia</i>).	

5. Hearing may be (in pharyngeal disease only)	Impaired.	Temporarily.
	Abnormally acute.	
	Painful.	

6. Senses of smell and of taste may be	Impaired.	Temporarily.
		Permanently.

7. Pain or altered sensation may be experienced in exercise of any of the above functions, or may be irrespective of them, and may then be occasional or persistent.

B. PHYSICAL OR OBJECTIVE :—

1. Colour may be $\left\{ \begin{array}{l} \text{Increased} \\ \text{(\textit{Hyperæmia})}. \\ \text{Diminished} \\ \text{(\textit{Anaæmia})}. \\ \text{Altered.} \end{array} \right\}$ Uniformly
or
Partially.
2. Form and texture may be altered by $\left\{ \begin{array}{l} \text{Thickening.} \\ \text{Loss of tissue-ulceration.} \\ \text{Cicatricial narrowing.} \\ \text{Compression.} \\ \text{Paralysis, bi- or uni-lateral.} \\ \text{New formations.} \end{array} \right\}$
3. Position may be altered by disease $\left\{ \begin{array}{l} \text{Intrinsic.} \\ \text{Extrinsic.} \end{array} \right\}$
4. Secretion may be $\left\{ \begin{array}{l} \text{Excessive.} \\ \text{Deficient.} \\ \text{Arrested.} \end{array} \right\}$ Altered in colour,
consistence and
odour.

C. MISCELLANEOUS :—

External :—

General

- $\left\{ \begin{array}{l} \text{Circulation.} \\ \text{Temperature.} \\ \text{Respiration.} \\ \text{Lymphatic system.} \\ \text{Digestion.} \\ \text{Nutrition.} \\ \text{&c. &c.} \end{array} \right\}$

Commemorative

... Individual and family history.

A. FUNCTIONAL OR SUBJECTIVE SYMPTOMS.

1. The Voice may be natural in speaking, and modified only in singing, the upper or lower notes being lost, but the ordinary speaking voice being unaffected; or difficulty may be experienced in passing from one or other register of the singing voice. The sustaining power of either the singing or speaking voice may be diminished, the vocal organ becoming more or less quickly fatigued. [It is often well to test the voice by the piano, marking on what notes or in what register the voice fails.] The voice may be continuously hoarse, or may be uncertain, *i.e.*, sometimes natural or only slightly husky, at other times passing involuntarily into falsetto or into deep bass. It may be muffled or veiled. It may be unusually shrill or jerky. It may be strained and difficult. It may be lost in speaking, though in involuntary vocal acts, such as coughing and laughing, it may be phonetic; and, lastly, it may be entirely lost, and constitute the condition known as aphonia.* In pharyngeal affections, the phonetic quality of the voice will, *cæteris paribus*, not be impaired, though, articulation being interfered with, it will often sound thick or muffled, or will be quite altered in tone, acquiring a nasal character.

Speech may be painful or may be defective in the pronunciation of only certain consonants, as the palatal or guttural, the labial or the nasal.

2. Respiration may be altered; the respiratory

* In "The Nomenclature of Diseases" drawn up by the Royal College of Physicians, "Aphonia" is entered as a disease, and, unfortunately, this error has been perpetuated not only in some systematic treatises on medicine, but even in special works on Affections of the Throat.

movement being increased or decreased, hurried or retarded. The difficulty of breathing may be continuous, or the attacks of dyspnœa may be only paroxysmal. The breathing may be stertorous, or stridulous ; inspiration may be difficult, and ex-spiration easy, or *vice versa*, or both inspiratory and ex-spiratory acts may be impeded : there may be complete orthopnœa. Hæmoptysis rarely occurs except when the lungs are affected in phthisis, or in cancer of the larynx or pharynx. Streaks of blood are occasionally observed in the expectoration accompanying some minor diseases of both pharynx and larynx.

Nasal Respiration is often obstructed in certain pharyngeal diseases, and from the presence of new growths. No examination of the throat is complete without careful inspection of the nasal passages through both anterior and posterior nostrils, and also where symptoms point to disease of the naso-pharynx, by means of the index finger introduced upwards behind the velum, though these are points much neglected both in precept and practice.

In certain pharyngeal diseases also there is a disagreeable odour in the ex-spired breath, and it is important to ascertain the point of origin of the stench. In many instances, neither ocular nor digital examination will suffice, and the observer's olfactory sense must be called to assistance. If the patient, firmly closing his nostrils, forcibly exhales, and the ex-spired breath is offensive, the disease is situated either in the larynx or œsophagus, pharynx or tonsils, or it may be caused by decaying teeth, or by gastric derangement. If, on the other hand, with mouth firmly closed, nasal ex-spiration gives a foul odour, the disease

is in the nasal cavity itself. By closing first one and then the other nostril, the surgeon may still further localize the seat of the disease. Another most valuable diagnostic point is whether the patient is conscious of the offensiveness of his breath. If so, the cause is an obstruction from presence of polypus, or other growth (see page 119). If not, the disease is of secreting surface.

3. **Cough.**—Cough may amount to simply irritable hacking or hemming, or it may have all the characters of true cough. Its phonetic quality may vary: thus it may be hoarse, barking, or metallic, stridulous or aphonic. It may be accompanied by pain, may occur only on rising in the morning, on exertion, on lying down, after meals, on change of temperature, or after walking; or it may be frequent and continuous. It may be short, sharp, and paroxysmal, or suffocative; and, lastly, it may occasion retching and even vomiting.

Stoerk, in a pamphlet recently published in Vienna, has drawn attention to the fact that there are certain "cough-spots"; namely, the inter-arytenoid fold, the posterior wall of the larynx and trachea, the under surface of the vocal cords, and the bifurcation of the trachea. He does not consider accumulation of mucus in the smaller bronchi causative of cough until it reaches one of the points above mentioned. Careful examination of these suggestions has convinced the author of the accuracy of Stoerk's observations; and it need hardly be said that they are of the highest diagnostic importance. It may be added, however, that the cause of cough by reflex irritation is hardly explained by the learned Viennese professor. Probably he would consider it as belonging to a separate category.

When the larynx only is affected, the cough, unless there be ulceration, is accompanied by but little secretion, the mucus being expelled in small gelatinous pellets, more or less discoloured by impurities of atmosphere. Expectoration may be either free and mucous, as in chronic congestion; muco-purulent after acute inflammation; purulent, as in the bursting of abscesses; frothy, as in phthisis; clear and glairy, as in stenosis; and accompanied by blood in some cases, in which there is loss of tissue.

In malignant disease, and whenever there is caries or necrosis, the expectoration will be of foetid odour.

In laryngorrhœa, and in blenorhœa, a disease described at some length by Stoerk as peculiar to certain inhabitants of Bessarabia and Galicia, the secretion is excessive.

4. **Deglutition.**—This may be painful (*odynphagia*), difficult (*dysphagia*), or impossible (*aphagia*).

In considering the relative importance of this symptom, it is necessary to find out in which act of deglutition difficulty or pain occurs,—whether, 1. in propulsion of the bolus behind the anterior pillars; or 2. in the closure of the naso-pharyngeal space, and elevation of the root of the tongue, which act sends the morsel into the middle of the pharynx; or whether, lastly, in the passage of the food from the pharynx into the œsophagus.

The cause of the dysphagia may be either an obstruction in the soft palate, in the pharynx, or œsophagus; or an intrinsic nervo-muscular disorder of one or more of those parts; or it may be due to thickening and ulceration, either of the velum,

pharynx, or epiglottis; in which case the food either returns through the nares or passes into the larynx. It may also be due to extraneous causes; viz., mediastinal tumours, aneurisms, and enlarged bronchial glands, or to carcinomatous deposits in the sheath of the œsophagus. Occasionally dysphagia is caused by ulceration, or new formations in the neighbourhood of the inter-arytenoid folds, or by the pressure of an external tumour, as a goitre, or other disease of the thyroid gland. Dysphagia may be modified according to the nature of the food taken, whether solid or fluid, warm or cold, piquant or non-irritant, and may be paroxysmal and spasmodic, or continuous.

Odynphagia always implies thickening and ulceration of the epiglottis of a tuberculous or malignant character. In syphilitic ulceration and thickening, pain in swallowing is neither a prominent nor even a usual symptom.

Aphagia rarely occurs, except in very advanced stages of laryngeal disease, or as the result of malignant obstruction.

5. **Hearing** is impaired (but rarely) in some cases in which there is direct obstruction of the Eustachian tubes by enlarged tonsils. More commonly, in such cases, the deafness is due to thickening of the pharyngeal orifice of the tubes, or to disease of mucous secretion of the naso-pharynx, or to extension of any catarrhal inflammation from this region to the middle ear. All surgeons who would be thoroughly acquainted with the study of throat diseases should also acquire facility in examining the auditory apparatus, and should be able to recognize the importance of at least the more common

variations in the appearances of the drumhead, the value of tests by watch and tuning-fork, and how to pass a Eustachian catheter, or to use a Politzer air-bag. It is difficult to comprehend how an aurist can work satisfactorily without understanding the throat, or how one who occupies himself with diseases in the latter region can fail sometimes to be at a loss, unless he has worked also at aural surgery.

6. **The sense of smell** may be impaired from any of the causes likely to impede nasal respiration, from disorder of mucous secretion, and from many diseases extending from the pharynx to the naso-pharynx. The author has seen two cases of complete anosmia cured by removal of an elongated uvula.

The sense of taste is generally disordered where that of smell is impaired. It will be probably limited in the class of diseases treated in these pages to inability to distinguish flavour of food and bouquet of wine; impressions on the palate due to the temperature and piquancy of food being unchanged.

7. **Pain** is an important element of diagnosis, which will be considered when dealing in detail with the various diseases in which it occurs. Almost all reflex nervous pains and sensations may be traced to objective sources, and should not be treated, as is too frequently the case, as entities. Amongst the commonest disturbances of ordinary sensation are the feelings of dryness, of a foreign body in the throat—a hair, gravel, or a lump,—a feeling of nausea and fatigue in performance of functional acts.

B. PHYSICAL OR OBJECTIVE SYMPTOMS.

Those deviations from the normal condition which

are revealed to the observer by reflected light will be more especially considered under this heading.

1. **Colour** of the parts may be increased, diminished, or altered. It may be increased or hyperæmic in acute, subacute, or chronic inflammation; it will be diminished or anaemic in general anaemia, and in certain toxic affections; changed to a bluish tinge in cyanosis; yellowish or greenish in jaundice; grey as in the earlier stages of phthisis, and altered in oedematous, purulent, and tuberculous infiltration. The colour of new formations varies of course with their pathological nature, ranging from white or pale grey to deep red or purple.

The change of colour may be general or partial; thus one vocal cord may be congested, the other normal; the epiglottis may be congested, and the arytenoids healthy, or *vice versa*. The colour may be altered in patches, as in the congestion of the vocal cords of secondary syphilis. The colour of ulcerations varies also according to their nature. It must not be forgotten that the cartilaginous part of the vocal cords, especially in the case of those who constantly use the voice, is often slightly pink in colour, and this appearance must not be mistaken for the result of disease.

2. **Form**.—The calibre of the glottis is seldom increased, as even if there is loss of tissue by ulceration, there is generally attendant thickening. The calibre may be diminished by all causes tending to infiltration, serous, purulent, tubercular, syphilitic, or malignant; by new formations, and by paralysis of one or more intrinsic muscles. As a result of this last cause, the action of the vocal cords, *i.e.* their power of lateral

approximation and separation, may be impeded, or tension may be impaired on one or both sides. Such paralysis may arise from pressure directly on the nerve-supply, from central or peripheral disease, from interstitial disease of muscles, or from mechanical causes.

Impairment of movement of the epiglottis is always due to mechanical causes, or to relaxation of the glosso-epiglottic ligaments. It is paralyzed in certain cases in which the superior laryngeal nerve is diseased. The texture or surface-appearance will be changed under the varying conditions of the inflammatory process above alluded to.

3. Position.—Certain portions of the larynx may be displaced, which might be considered by some as constituting only an alteration in form, or the whole organ may be pushed more or less out of position. Partial displacement is generally due to intrinsic disease, especially syphilitic, while displacement of the entire larynx is the result of disease in the neighbouring structures, as cancer, abscesses, bronchocele, and other glandular affections.

4. Secretion may be excessive, defective, or altered.

The character of the secretion of the salivary and other glands is an important element of diagnosis, and is to be considered independently of the question of the nature of sputa.

C. MISCELLANEOUS AND COMMEMORATIVE SYMPTOMS.

Into these it is unnecessary to enter at any length. The state of the tongue, the pulse, the temperature, the appetite and nutrition, the action of the liver, kidneys, and uterus, are all of as much importance in

laryngeal disease as in any other. This point is one to be remembered, as in many cases the special method of examination seems to tell us so much that we feel inclined to make a diagnosis of the malady without asking a question of the patient. In external examinations, however, it is important to examine the glands in the suboccipital region for corroboration of syphilis, and those in the parotid and submaxillary region for evidence of suspected malignant or strumous disease. Much may be learned by external examination of the larynx itself. There may be redness and swelling, as in perichondrial disease. It may be seen to be pushed out of the median line; or, as in the cases of cancer and syphilitic infiltration, its mobility will be felt to be impeded. Stethoscopic examination will also be necessary to ascertain the condition of the lungs in cases of chronic laryngitis, or wherever there seems reason to suspect the presence of tubercle. The general utility of auscultation of the larynx or trachea is doubtful, though it is certainly of considerable diagnostic value in some affections of the oesophagus. Careful examination of the heart and large vessels, and of the mediastinum for enlarged glands, or other intra-thoracic growths, is all-important where there is the least interference with mobility or co-ordinative action of the vocal cords. The sphygmograph and ophthalmoscope also frequently aid the observer in a most important degree to the obtaining of an accurate diagnosis. The history of the patient, both personal and family, will greatly assist in forming a correct prognosis, and in laying down sound bases for treatment.

CHAPTER V.

THERAPEUTICS OF THROAT DISEASES :

MEDICAL, SURGICAL, DIETETIC, AND HYGIENIC.

IN considering the therapeutics of throat diseases, special attention will necessarily be given to those remedies and methods of treatment which have a topical action; but it must not be supposed on this account that general treatment is unnecessary in diseases of the throat; on the contrary, according to the author's experience, it is often equally futile to treat throat diseases by only topical, as it is by only general means, and with this view many formulæ for suitable constitutional remedies are appended.

Lengthened reference to general methods of treatment, therefore, is not omitted because such treatment is considered unimportant, but because, on the principle that sound general medical and surgical knowledge should precede a study of the special branches of practice, it is to be presumed that most readers of these pages will be acquainted with the principles of constitutional therapeutics.

General treatment is always specially indicated when the throat affection is symptomatic of any general malady—scrofula, phthisis, or syphilis for example,—or when it occurs in the course of a continued fever, of one of the exanthemata, of diphtheria, or as a result

of zymotic influences. In other cases also a constitutional diathesis must be combated concurrently with the local trouble.

In very many local manifestations, however, general treatment is, if not contra-indicated, at least unnecessary, and in many cases of chronic laryngitis and pharyngitis the influence of local treatment will be markedly beneficial without the administration of any general remedies whatever.

In pursuing local treatment it is necessary to consider the effect of remedies on the vascular supply, on the mucous and salivary secretion, on loss of tissue, on nervo-muscular action, and on the arrest of development or eradication of new formations. It is, therefore, exceedingly difficult to separate medical from surgical therapeutics, and both will be considered under one chapter.

In employing topical remedies it is always well to bear in mind the physiological functions of the part to which the remedy is to be applied. For instance, the function of the larynx being to afford passage to air and not to liquids, the use of sprays to this part is in the opinion of the author a mistake; vapour inhalations are much more suitable and more in accordance with the natural function of the organ. The same may be said of the practice of blowing powders into the larynx or the administration of snuffs in nasal diseases. They are entirely unphysiological, seldom beneficial, and often deleterious. On the same principle, whenever applications of a liquid character are absolutely necessary, only a very small quantity of the liquid should be applied at a time (otherwise spasm of the glottis will be caused), and the area of application should

be as far as possible limited to the exact portion affected.

Topical remedies may be divided into three classes :—

1. Those which can be administered by the patient alone.
2. Those which can be administered either by the patient or the practitioner.
3. Those which, requiring the management of a skilled hand, can be administered by the practitioner only.

The first class includes such remedies as gargles, lozenges, powders, and inhalations, as well as all kinds of external applications.

The second class includes pharyngeal and nasal sprays, insufflations, douches, and external or pharyngeal pigments.

In the third class are contained laryngeal applications of all kinds, except those of the nature of inhalations, and all forms of operative procedure.

CLASS I. Gargles.—With respect to the value of gargles considerable difference of opinion exists, and it is an undecided point as to how far the gargle penetrates. There can, however, be little doubt that this depends to a considerable extent on the skill of the patient and the amount of practice which he has had. It would appear, from the experiments and demonstrations of M. Guimier and others, that by practice gargles may be allowed to enter the larynx itself and to come in contact with the vocal cords, but it is probable that in the ordinary way gargles seldom, if ever, go behind the anterior pillars of the fauces.

Gargles are nevertheless of some value as mouth-

washes, even if their field of action be as restricted as it generally is ; and inasmuch as some patients are able to extend that action, their value will in such cases be proportionately increased. They are contraindicated when there is actual faucial pain.

Gargles are used for their antiseptic, astringent, sedative, and stimulant properties. Formulae of gargles having these respective actions will be found in the Appendix.*

In the case of children, the use of gargles is of course usually impossible, and, as a substitute for them, it is an excellent plan to have the drug required to exercise local effect made into a powder with white sugar, or some other convenient vehicle, and placed on the tongue. If allowed to remain there and dissolve gradually, the topical effect of the remedy will be produced almost, if not quite, as well as if a gargle had been used, and the constitutional effect be enhanced. This method is of course only applicable when the remedy is one which may be swallowed with impunity, and is not of a nauseous character. As a local application, ice is of great value, not only as an anæsthetic before operation, but as a remedial agent in pharyngeal disease, tonsillitis, &c., and in the sore throat of scarlatina and diphtheria. For adults nothing is more agreeable than simple block ice, but the remedy

* It will be seen that many of these formulae are almost identical with those contained in the Throat Hospital Pharmacopœia, in the preparation of the first edition of which the author took an active part, and it has been thought better not to introduce any novelties in detail of prescribing for the sake of quasi-distinction. No other formulae are given in this Appendix than appear really necessary ; none are omitted which the author has found of any distinct value in his own experience.

is somewhat difficult to administer to children, who, suffering from pain in swallowing, are unwilling to exercise the function of deglutition. In these cases the author has found it of great service to ice the food. A simple mixture of egg, milk, and sugar, uncooked, and iced, is taken with avidity, and is serviceable both as a nutriment and as a remedy. The Wenham Lake Ice Company make very simple and cheap refrigerators.

Lozenges.—The lozenge is a convenient form for the administration of many remedies. It should be remembered that by the use of lozenges we get not only the immediate local effect, but also the constitutional action of the drug; and this is often greater in proportion than if a corresponding amount of the remedy had been taken direct into the stomach. As examples of this may be adduced guaiacum, a comparatively small amount of which, given in the form of a lozenge, will produce constitutional symptoms, and also the very powerful effects produced by sedative lozenges, which contain but very moderate doses of their respective anodyne ingredient. By the use of lozenges the salivary secretion is stimulated; this fact should be borne in mind when giving astringent lozenges, for, as they frequently increase the dryness of the throat, symptomatic of pharyngeal relaxation, they should be combined with a sialagogue, as chlorate of potash (Form. 11 and 14).

The British Pharmacopœia contains some formulæ for lozenges which are very useful; but a drawback to them is found in their hardness, the consequent slowness with which they dissolve, and their liability to produce erosion of the mucous membrane.

To obviate these inconveniences, it is preferable to

incorporate the ingredients of all lozenges with fruit-paste, which not only renders them more palatable, but facilitates their dissolution.

Inhalations.—One of the most valuable and effective methods of applying remedial agents to the throat and larynx is by means of inhalations. Like most other valuable forms of treatment, however, it has been carried too far, and applied in too many different ways.

Inhalations, as used by various authorities, may be subdivided into vapours, aqueous or volatile, atomized fluids, and fumigations.

Vapour Inhalations.—These are either moist or dry, and the moist have been further subdivided into *hot*, when the temperature of the moist air ranges between 130° and 150° Fahr., and *cold*, when the temperature of the moist air is from 60° to 100° Fahr. Dry inhalations are always hot, that is to say, heat is applied to vaporize certain volatile matters.

For the administration of remedies by this method a suitable inhaler will be convenient. Various forms of inhaler have been devised, all more or less complicated in their nature, and all possessing, according to their designers, peculiar advantages. That devised by the author, and originally made for him by Messrs. Corbyn, and known as Corbyn's improved double-valve inhaler (Fig. P), will, he believes, be found the simplest and most efficacious. The hospital inhaler of Martindale is an excellent and cheap instrument, and that of Ellis (sold by Arnold) is also good. The more recent inhalers of Messrs. Maw's manufacture are great improvements on those formerly constructed. The Carrick and Eclectic inhalers are efficient, but they are very complicated, less compact, and much

more expensive than those above named. So-called pocket-inhalers are useless in cases of disease.

With regard to the method of using the inhaler, the following are the printed directions which the author gives to such patients as require to inhale :—

“ For Ordinary Use.—The medicament being added to a pint of hot water at the prescribed tempera-

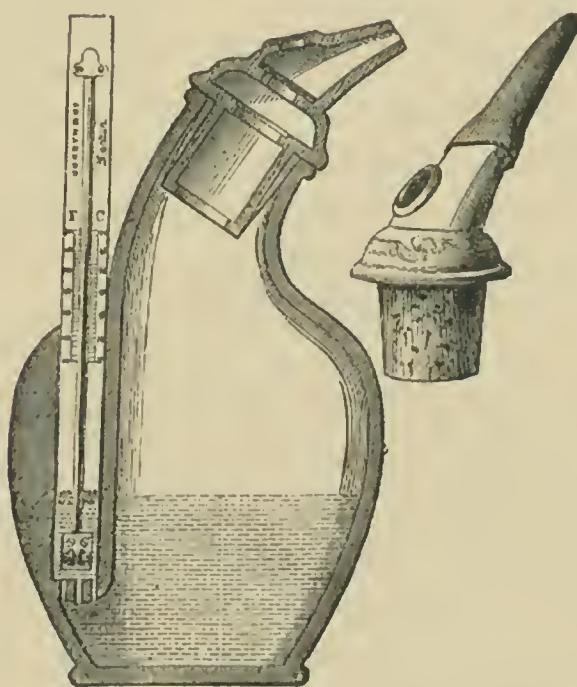


Fig. P.—Sectional View of CORBYN'S DOUBLE-VALVE INHALER, as suggested by the author, and described in the *British Medical Journal*, April 25th, 1874.

ture, the vapour should be *inhaled* by means of full but not exaggerated inspirations, and should then be gently *exhaled* through the nostrils; in this manner six to eight inhalations may be taken each minute.

“ In cases of Obstruction of the Passages from the Throat to the Ear, it is sometimes desirable that the vapour should be forced towards the latter organ. For this purpose, a full mouthful of the steam should

be taken, the mouth should then be shut, the nostrils compressed by thumb and finger of one hand, and the cheeks well expanded. This confined forcible expiration must be of only one or two seconds' duration, and must not be repeated oftener than once in a minute, the ordinary inhaling going on in the intervals; in other words, every sixth or eighth ordinary inhalation should be intermitted for one of those just described.

"For Nasal Inhalation an India-rubber nasal-piece should be placed on the mouth-piece of the inhaler, or the orifice, if jug or other vessel is used, should be narrowed by a cone of cardboard. Insert this nasal-piece into one nostril, the mouth and the other nostril being closed; after inhaling, gently exhale through the mouth."

Dry, hot inhalations are of value in many cases of excessive catarrhal secretion.

It seems probable that, in a large number of such cases, the Turkish bath derives much of its value, not only from its action on the sudatory glands, but also from the topical action of the hot, dry air upon the mucous membrane of the respiratory tract. It would be a good plan if in all Turkish baths tubes were arranged so that this air might be inhaled without the patient going into the hottest or "radiating" room.

Atomized Fluid Inhalations.—In pharyngeal and nasal affections atomized inhalations may be of value, but they are useless in laryngeal affections, and are not in accordance with the principle previously laid down of adapting remedies to the physiological function of the part. But this is not the only objection—which might be disallowed if they were of value. In point

of fact, however, very little of the spray enters the larynx. The moment it impinges on the epiglottis, that valve closes tightly against the entrance of so foreign an intruder. The patient gives, all the time of inhaling, short gaspy coughs, with intervals of more severe paroxysm whenever the epiglottis is momentarily raised. If a throat be examined after five minutes' use of an atomized inhalation, it will be noticed to be in a state of really considerable hyperæmia.

In diphtheria, when the exudation is on the pharynx only, spray inhalations are serviceable; but they will be found of no use when the disease has extended into

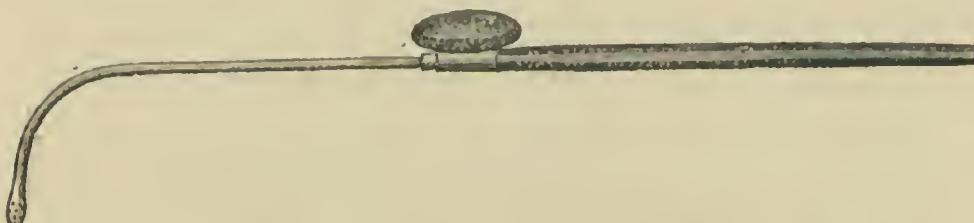


Fig. Q.—LARYNGEAL SYRINGE. By pressure of the finger on the India-rubber covered receptacle at the end of the handle, the amount of fluid to be drawn into the tube or to be discharged, can be regulated.

the larynx and trachea, unless applied directly with one of Türck's or Schroetter's laryngeal syringes (Fig. Q). As a rule, applications with a brush are to be preferred to atomized inhalations. The only way, in the author's opinion, by which pulverized liquids can be taken into the larynx and lungs, without doing more harm than good, is that in which the waters of Marlioz (Aix en Savoie), Vichy, &c., are administered, large rooms (*salles d'inhalations*) being charged with clouds of very finely-atomized medicated waters.

In accordance with this opinion of the value of spray inhalations, the list of formulæ for this kind

of remedy will be limited to those suitable for pharyngeal affections.

The Uses of Inhalations. — Inhalations are employed for their action as antiseptics, antispasmodics, haemostatics, resolvents, sedatives, and stimulants (capillary, mucous, and salivary). The best time for administering inhalations is, as a rule, before meals. The inhalation should not be taken rapidly; about six inspirations in a minute being quite sufficient. When the patient is using hot vapour inhalations, it will, of course, be necessary for him to take precautions against catching cold; and for this purpose it is advisable not to go out of doors within half an hour of taking such an inhalation. In the case of cold inhalations, however, the patient may go out at once with impunity, and it will even be found, in some cases, that the use of a cold inhalation, just before going out, will procure for the patient an immunity from catarrh which he had not previously enjoyed.

In the administration of sedative inhalations very great care must be exercised, some volatile sedatives, when mixed with steam, having a more powerful action than under other circumstances. For instance, as elsewhere remarked,* the inhalation of even one drop of chloroform in a pint of water at 150° Fahr. will occasionally produce giddiness and nausea. A similar caution applies to nitrite of amyl and aldehyde, several drops of which may, however, be taken on blotting-paper without any toxic effect.

Fumigations, or fuming inhalations.—In this form the products of carboniferous combustion are inhaled.

* "Practical Remarks on Throat and Ear Diseases," No. III. p. 21 (Baillière, 1877).

These inhalations are usually produced by the ignition of unsized paper saturated with nitre or some other substance. Dense fumes arise from these, which are inhaled. The papers may be medicated with various stimulating and antispasmodic ingredients.

In certain cases of tertiary syphilitic laryngitis and tracheitis, as well as on general principles in secondary syphilis, mercurial fumigations, administered in the method recommended by Mr. Henry Lee, will be most beneficial in effect on the local condition.

External Applications to the throat are frequently of great value, and consist of compresses, poultices, pigments, &c.

The ordinary wet compress should be made thus: four folds of linen, about 6 in. by 3 in., wetted, should be covered with a layer of oiled silk or gutta-percha tissue, half an inch larger in every direction than the linen compress. By lining the oiled silk with flannel, greater adaptability is obtained. Of poultices the best forms are Dr. Lelievre's Iceland moss poultice, the ordinary linseed or linseed and mustard poultice, and spongio-piline. Mustard leaves are not recommended; some, which have been procured from the original establishment, have appeared to contain an irritant ingredient foreign to the mustard-seed, which renders them very objectionable.

Of pigments for external application the best for purposes of counter-irritation are the compound limiment of mustard, the limiment or the tincture of iodine of the British Pharmacopœia: one coat of the latter may be applied every night with great advantage in chronic laryngitis, and the stain is generally gone before morning. The pigmentum

chloral et camphoræ (Form. 41) will also be found of great value as a sedative in neuralgic affections, and in painful diseases of the cartilages or interior of the larynx. Strong counter-irritation by blistering has been found rather harmful than beneficial in the author's experience.

CLASS II. Pharyngeal and Nasal Sprays.—Atomized inhalations are frequently of service in disease of the pharynx and naso-pharynx, especially where there is deposit of false membrane, as in diphtheria, or much inspissated mucus, as in ozœna, and in specific ulcer-

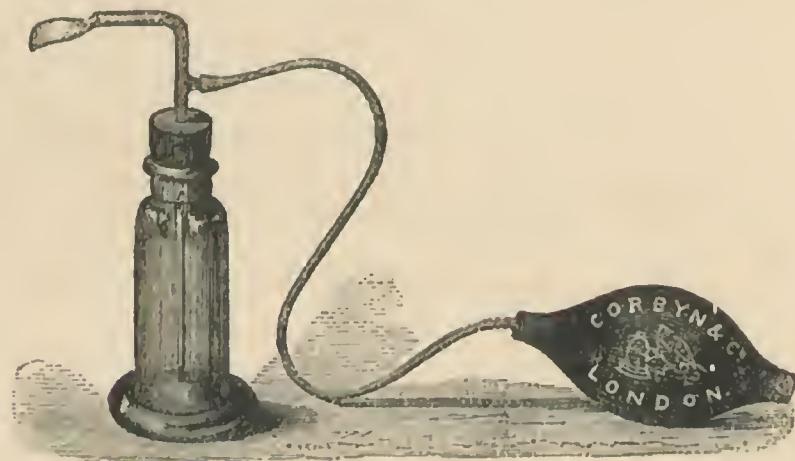


Fig. R.—PHARYNGEAL SPRAY PRODUCER.

tions. In chronic pharyngitis also the continued contact of an astringent spray for some minutes is sometimes more efficacious than topical applications with the brush, and is certainly better if the remedy is to be applied by the patient himself.

A very simple "Throat Spray" is that of Messrs. Corbyn, the vulcanite spatula, which is a part of the apparatus, acting well both in keeping the tongue down and in directing the stream of spray to the back of the fauces (Fig. R). Another advantage of this

spray is that it is non-continuous. The spray may therefore be projected simultaneously with the act of inspiration, and arrested during ex-spiration, whereas, in Siegle's and other continuous atomizing apparatus, the spray plays the whole time, and thus probably increases the irritation which has been alluded to as a natural effect of such measures.

Insufflations of powders are not capable of general application. They are much in vogue of late for nasal, pharyngeal, and laryngeal disease. The author has given them a fair trial and finds that—1. In nasal diseases, they are as useless as the unphysiological ground on which they are recommended would lead

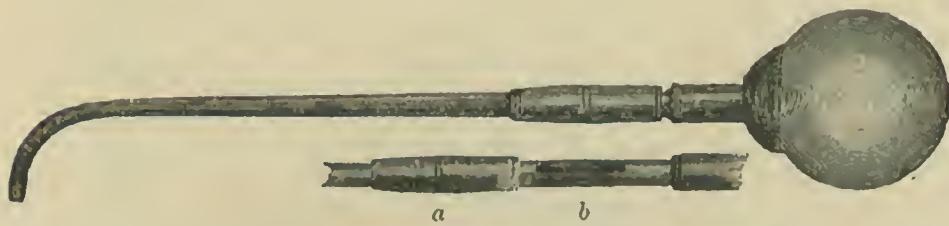


Fig. S.—INSUFFLATOR for applying medicated powders to the throat. The portion of the tube *a* slips up and discloses a receptacle, *b*, for the powder. When charged, the telescope part, *a*, can be slid back.

the practitioner to expect; for if there be excess of thin rhinal secretion, it is by powders made thick; if the secretion be thick, it is made thicker. In any case the orifices of the glands are obstructed, and the result may be less discharge, but at the expense of increase of inflammation of the mucous membrane, and probably of incrustations leading to erosion and ulceration. 2. In the pharynx insufflations of iodoform and other remedies are sometimes serviceable in painful ulcerations, though they are not often used by the author. The only condition in which they are really of benefit is in tuberculous thickening and ulceration of the epiglottis.

In these cases direct applications by means of an insufflation of a mixture of bismuth and tragacanth, containing morphia in varying proportions, are attended with the best results, and the remedy in this form can be better applied by the patient than can a liquid. The latter form is, however, on many accounts, preferable when the practitioner makes the application, as the remedy can be applied with far greater accuracy. Powders may also be applied to the



Fig. T.—The ANTERIOR SYPHON NASAL DOUCHE. *a*, SOFT RUBBER NASAL PIECE, employed by author for Douche and Politzer Bag.

œsophagus with good results, and are probably the best form of topical remedy for that region. Laryngeal insufflations for disease below the epiglottis are injurious rather than beneficial.

The illustration (Fig. S) represents the most convenient form of insufflator.

Douches.—These are the anterior nasal douche, the posterior nasal douche, Türck's laryngeal douche, already mentioned, and the œsophageal douche. The

last-named is but little employed, and is not recommended by the author, owing to the fact that any fluids applied to the œsophagus are very quickly absorbed or washed away.

The action of the anterior nasal douche (Fig. T) is based upon the fact that when breathing is carried on with the mouth open, the palate becomes approximated to the pharynx, and a current of fluid sent through one nostril will issue from the other. The effect produced by the use of this douche, however, is not very thorough, and it is now almost superseded in the author's practice by the posterior nasal douche. Besides the inefficacy of the anterior nasal douche, it is, in some cases, absolutely injurious. Dr. Roosa * has brought overwhelming evidence in support of his statement that the anterior nasal douche, in a considerable number of cases, causes acute inflammation of the middle ear. (See Chapter VIII.)

This objection does not seem, according to the author's experience,† to obtain with respect to the use of the posterior nasal douche (Fig. U), which is, besides, most effectual in clearing the post-nasal and nasal cavities of abnormal secretion.

Douches are generally used as antiseptic and obstruent irrigations, and occasionally also as hæmostatics.

Pigments for Internal Application.—These can only be applied by the patients themselves to the pharynx and anterior—by some to posterior—nares. For application to the pharynx aqueous solutions are the best. If it be desired that the substance should

* "Diseases of the Ear," 3rd edition, p. 291. (New York, 1874.)

† "Post-Nasal Catarrh in Relation to Deafness." (Baillièr, 1877.)

remain long in contact with the part, it will be found better to mix it with bismuth and starch or mucilage

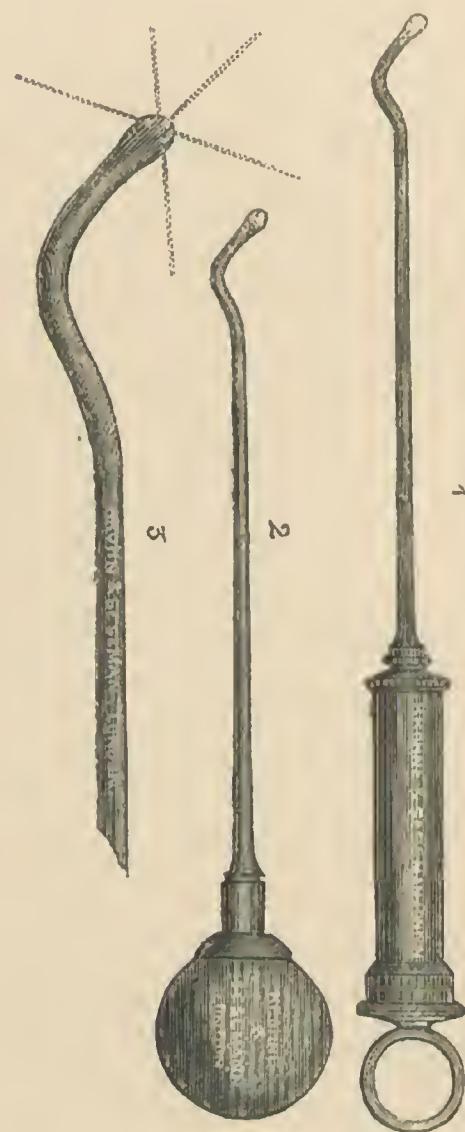
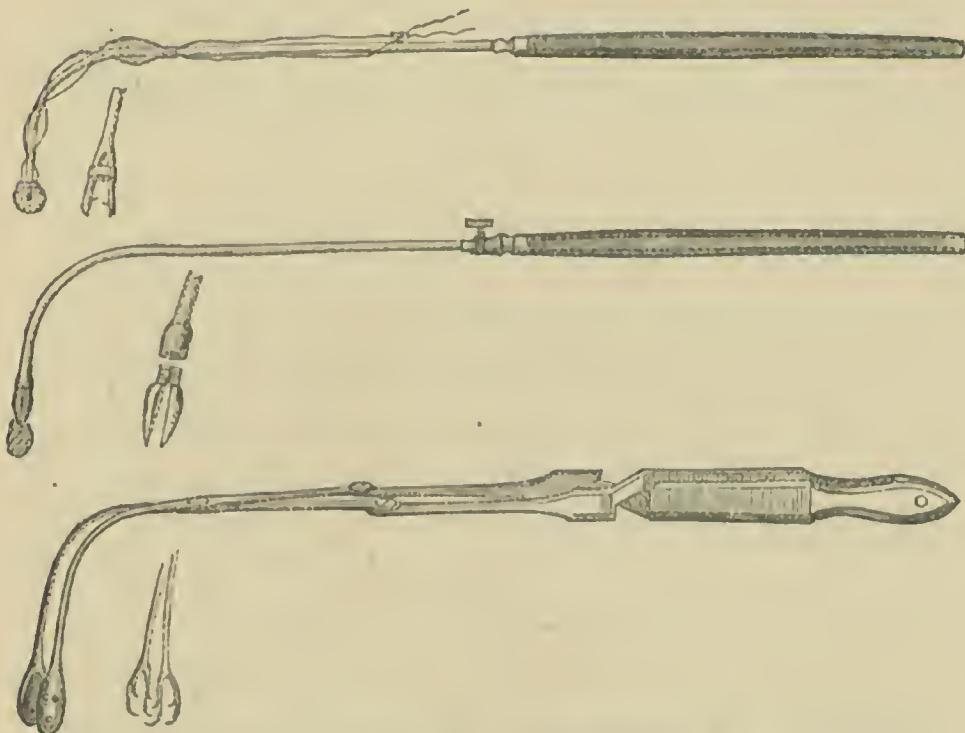


Fig. U.—No. 1. POSTERIOR NASAL SYRINGE, as used by author. This form is the best for a practitioner to employ. No. 2 represents the same principle, with a ball syringe, and is the best for self-administration of the douche; it has, however, the disadvantage of all ball syringes, that the air is never quite emptied, and there is consequently an unpleasant jerkiness in its action. No. 3 shows the stream as it comes from the different points: 1 and 2 are drawn half dimensions; No. 3 is of full size. The instrument is made of vulcanite, and the exact curve of the tube can be altered at will by well oiling it and then heating it over a spirit-lamp. Recently some tubes have been made of virgin silver, which can be readily adapted to any curve or angle.

than with glycerine. Undiluted preparations of glycerine are very irritating in all catarrhal conditions of mucous passages, owing to the peculiar attraction of glycerine for water. For applications to the nares, mixtures of vaseline will be found very useful: this substance is absorbed by the nasal mucous membrane, while oils and unguents are not.

All pigments should be applied with brushes. It is, as a rule, much more difficult to apply solutions



Figs. V, W, and X.—SPONGE-HOLDERS (half measurements). In the upper figure the sponge is made doubly secure by a thread passed through it.

accurately with a sponge; though many excellent practitioners use this last material secured in a suitable holder, employing a fresh morsel for each case (Figs. V, W, and X). Dr. Smyly, of Dublin, instead of a brush, uses aluminium handles, bent to a curve, round which he twists a piece of cotton-wool, using a fresh piece for each patient

(Fig. Y). Either of these materials is very suitable for pharyngeal, and especially for nasal applications, and under certain circumstances is preferable for diseases of a contagious nature. In the case of children, where the use of the brush, or of any instrument, is a matter of difficulty, it will be found a good plan to wrap a piece of lint round the index finger, as this can be often inserted where a brush or a sponge could not.

Pigments may be used for their antiseptic, astringent, sedative, solvent, or stimulant action.



Fig. Y.—DR. SMYLY'S COTTON-WOOL BRUSH (half measurements).

CLASS III. includes all intra-laryngeal applications. These, in the practice of the author, are confined to fluid applications with a brush, solid applications with a porte-caustique, the galvano-cautery, and the use of surgical instruments of various kinds.

Whenever it is necessary to apply solutions low down into the larynx, care should be exercised not to overcharge the brushes. In the case of ulceration, or where a local sedative effect is desired to be prolonged, the fluid may be thickened, as already described.

With regard to the best form of brush for making applications to the larynx, laryngologists differ in opinion, and each practitioner will, doubtless, suit his own fancy in this respect. The author is in the habit of using the brushes bent to a right angle, as recom-

mended by Dr. Morell-Mackenzie (Fig. Z). All instrument-makers make the brushes too large. Every brush for the larynx should be capable of being drawn to a fine point, like a water-colour painting-brush. The size should be that known to artists' colourmen as "goose-quill."

The most economical, convenient, and for general purposes safest, *porte-caustique* (Fig. AA), is a piece of curved aluminium rod—an old brush-handle may be conveniently used,—which is charged by simply dipping the point into fused nitrate of silver: a little of the silver salt can be kept in a porcelain crucible and melted by means of a spirit-lamp when it is required to recharge the aluminium points. It is, however, occasionally necessary to have guarded caustic-



Fig. Z.—THE LARYNGEAL BRUSH (half measurements).



Fig. AA.—SIMPLE LARYNGEAL PORTE-CAUSTIQUE, viz., an aluminium rod charged with fused nitrate of silver (half measurements).

holders. Instruments constructed on the principle of Lallemand's urethral cauterizer are the best.

Applications to the larynx, whether solid or liquid,

are used principally for their antiseptic, astringent, sedative, resolvent, caustic, or stimulant action.

Up to this point the forms of remedies described have been those which are directed almost entirely to diseases of the mucous membrane or submucous tissue, with absence of serous infiltration, and prior to the stage of new formations. Now, however, we must mention instruments and methods for the treatment of these latter classes of affections.

For scarifying the larynx in œdema, &c., the laryngeal lancet (Fig. BB) will be found necessary. The unguarded laryngeal lancet is a very dangerous instrument.

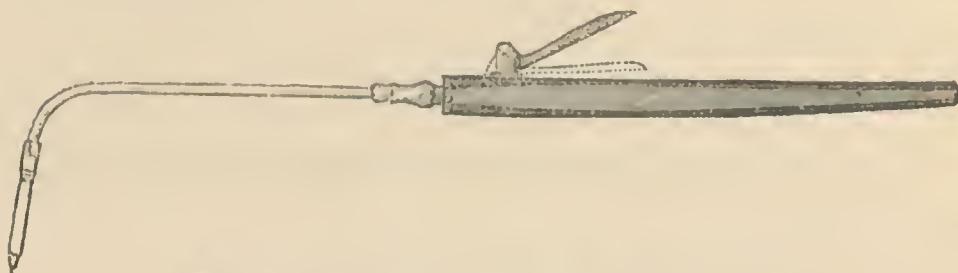


Fig. BB.—LARYNGEAL LANCET (half measurements).

With regard to instruments for removing growths from the larynx, the author has long had a firm conviction, based on experience, that those now most generally in use are far more dangerous than those formerly employed. At first all instruments for the removal of growths were on the principle of a snare; gradually, however, we got tube forceps, guillotines, rigid loops with sharp edges, fenestrated knives, forceps, some of them strong enough to break a vesical calculus, scissors, knives, guarded and unguarded, and the galvano-cautery.

This work being intended mainly for the general practitioner, and laryngeal growths being happily rare,

it is not necessary to enter largely upon the subject. It may, however, be stated as a general principle, with respect to laryngeal instruments, that it is impossible for them to be too delicate, and that they should all be constructed on the axiom "*Primum non nocere.*" The laryngeal snare of Gibb (Fig. CC) is a most valuable instrument for many small pedunculated growths, and the guarded instruments of Stoerk and Jellenfy are also constructed in accordance with the proposition just laid down. Mackenzie's tube forceps are very useful, but are not absolutely safe against the risk of doing injury to healthy tissues. All unguarded forceps

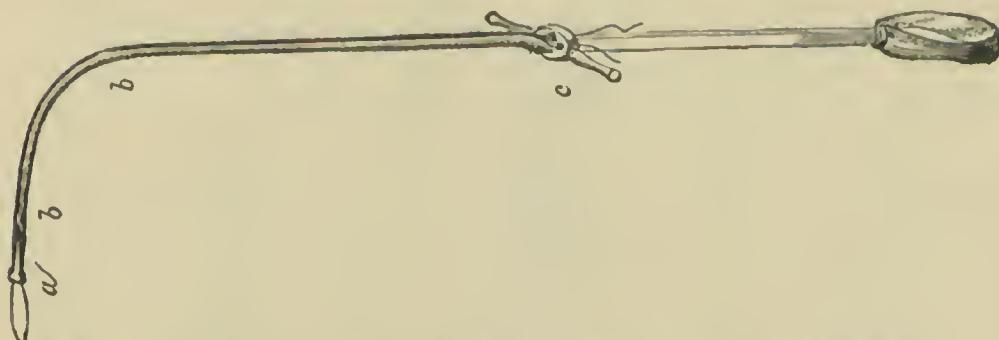


Fig. CC.—GIBB'S LARYNGEAL SNARE (half measurements). The wire loop passed through two eyes at *a* travels along an open canula tube, bridged at *bb*, and is secured at *c* to the movable crosspiece, traction on which diminishes the size of the loop.

are dangerous, and should hold no necessary or justifiable position in the surgeon's laryngeal armament.

To show that a word of caution is not uncalled for, facsimile copies have been made, and are here inserted, of some of the instruments used by Fauvel and figured in his recent work (Fig. DD, next page).

The application of induced electricity to the larynx by faradization is often called for. The best instrument for this purpose is that of Mackenzie, which consists of a necklet in connection with one pole

of the battery, the other being conducted to an electrode (Fig. EE), so arranged that the current does not pass until a small spring in the handle is pressed upon by the finger. The advantage of this is that no current is passed into the larynx until the instrument is in the required position; *e.g.*, in contact with the vocal cords. Some authors have also described

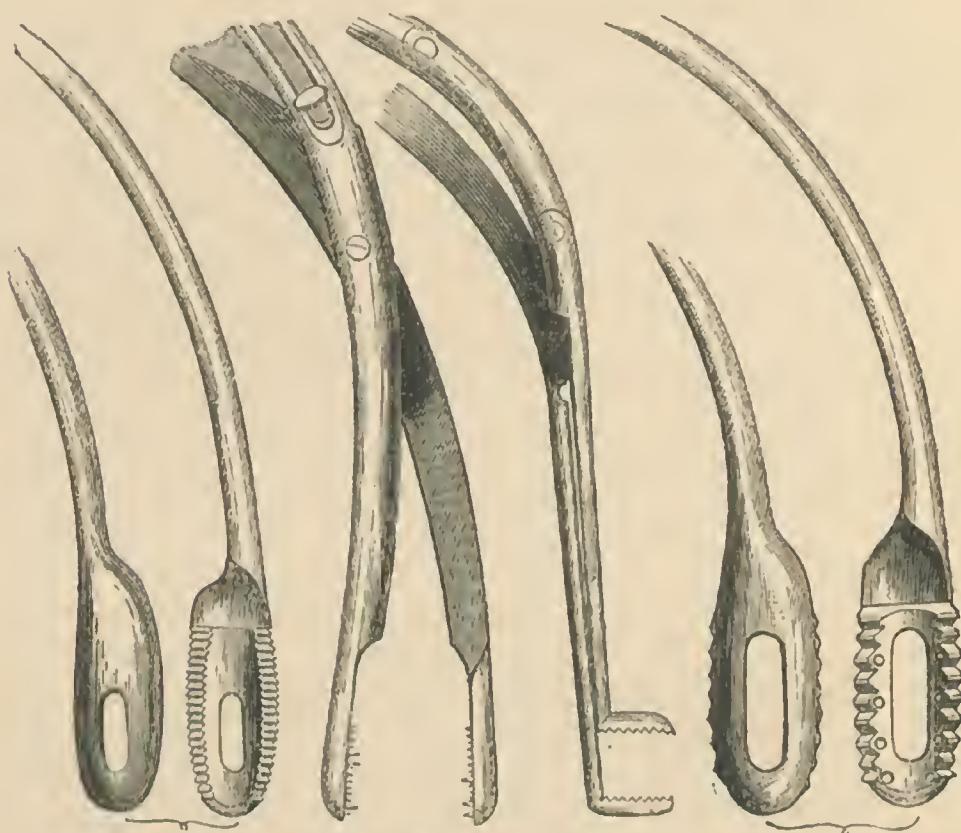


Fig. DD.—SOME VARIETIES OF FAUVEL'S LARYNGEAL FORCEPS FOR REMOVAL OF GROWTHS (full measurements).

double electrodes, by means of which it is supposed that particular muscles of the larynx may be subjected to the action of the electric current. Such ideas can only be regarded as flights of too vivid imaginations, or, at least, as pertaining to details of specialism too refined for present consideration.

Galvano-Cautery.—Another application of electricity to therapeutic purposes is found in the galvano-cautery, which the author has proved useful in many cases of throat disease, especially those of a specific character, as well as in some affections of the nose and ear.

The apparatus (Fig. FF) used by the author, and which was made for him by Messrs. Mayer & Meltzer, consists of a battery of two cells charged with bichromate of potash solution, each cell having four zinc and carbon plates. This battery is very convenient in

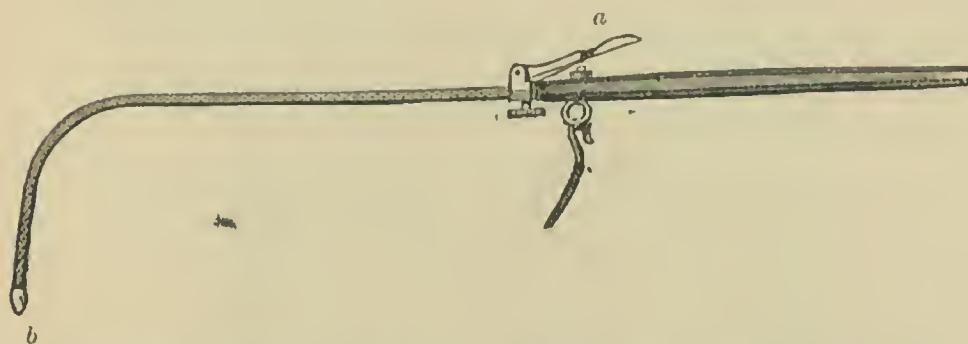


Fig. EE.—LARYNGEAL ELECTRODE (half measurements). The current is interrupted by the stop at *a*, and transmitted at *b*, the rest of the instrument between those two points being insulated by gum elastic tubing.

size, measuring only 12 inches in height by 9 inches square. Contact is made by the foot of the operator pressing on a key, both hands being thus left free, while at the same time the current is entirely under the control of the operator himself. For all practical purposes this battery is quite as serviceable as one of Grove's, while it possesses obvious advantages over that instrument in the matter of prime cost, in the less destructibility of material, and consequently lessened expenses of working; in portability and convenience for use; and

lastly, what is no slight matter in practice, in absence of smell.

In a paper read before the British Medical Associa-

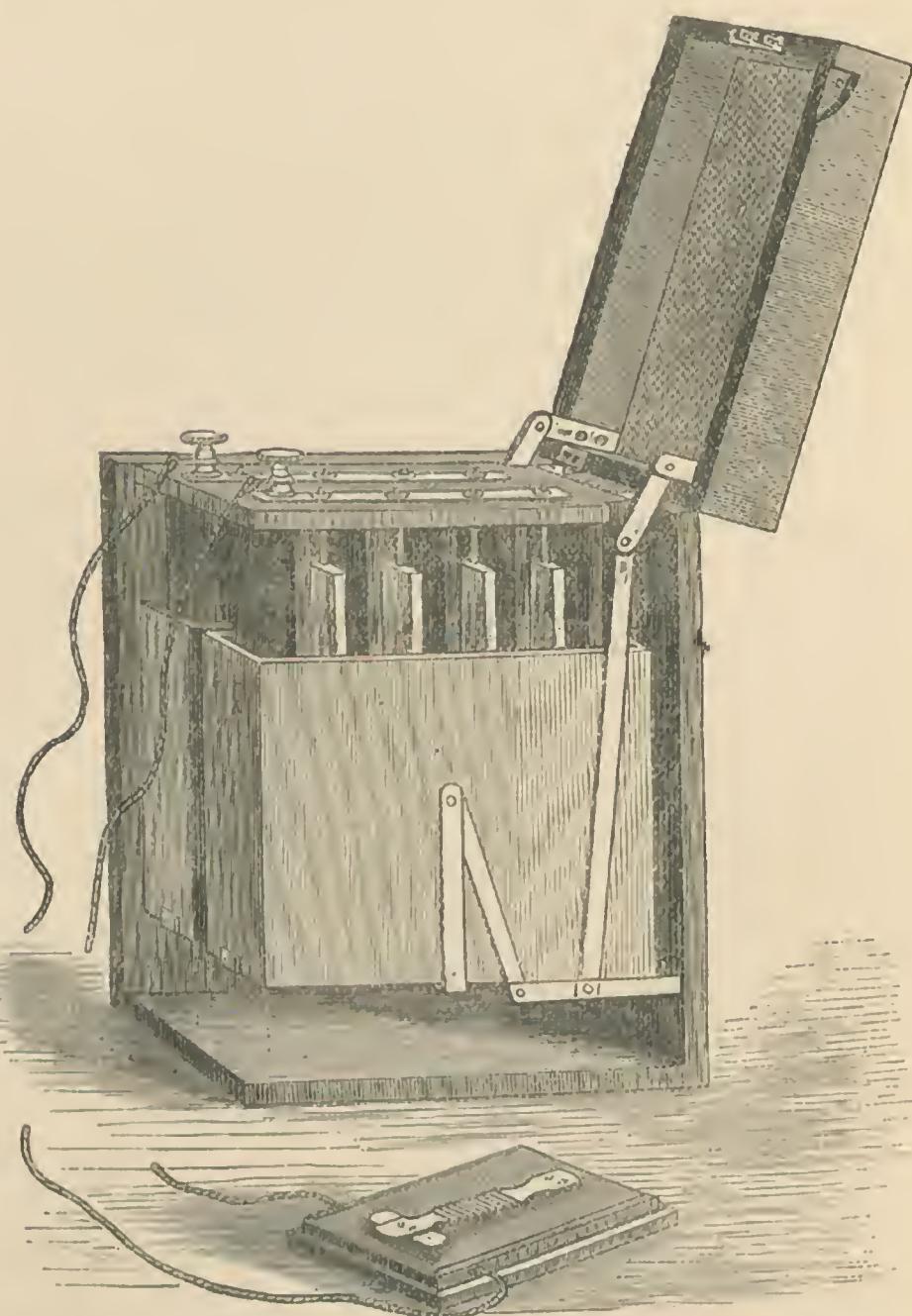


Fig. FF.—AUTHOR'S GALVANO-CAUSTIC BATTERY, WITH FOOT-PIECE. The side of the battery is taken out to show the arrangement for bringing the plates in contact on lifting the lid.

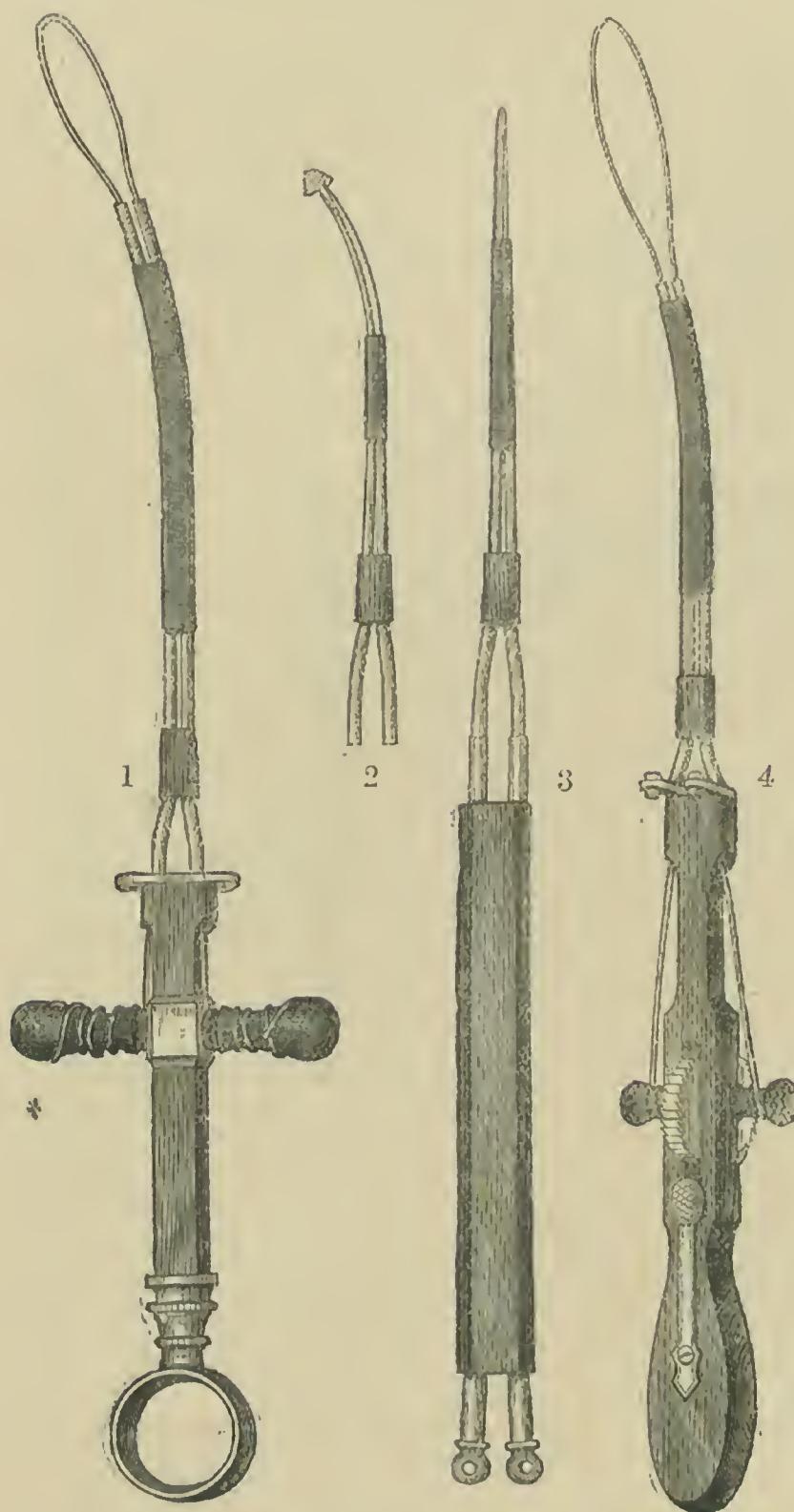


Fig. GG.—GALVANO-CAUSTIC LOOPS AND POINTS (half measurements).

tion at Manchester last August,* after narrating a considerable number of cases in which galvano-cautery had been employed, the author drew the following conclusions :—

1. That the galvano-cautery (applied by instruments

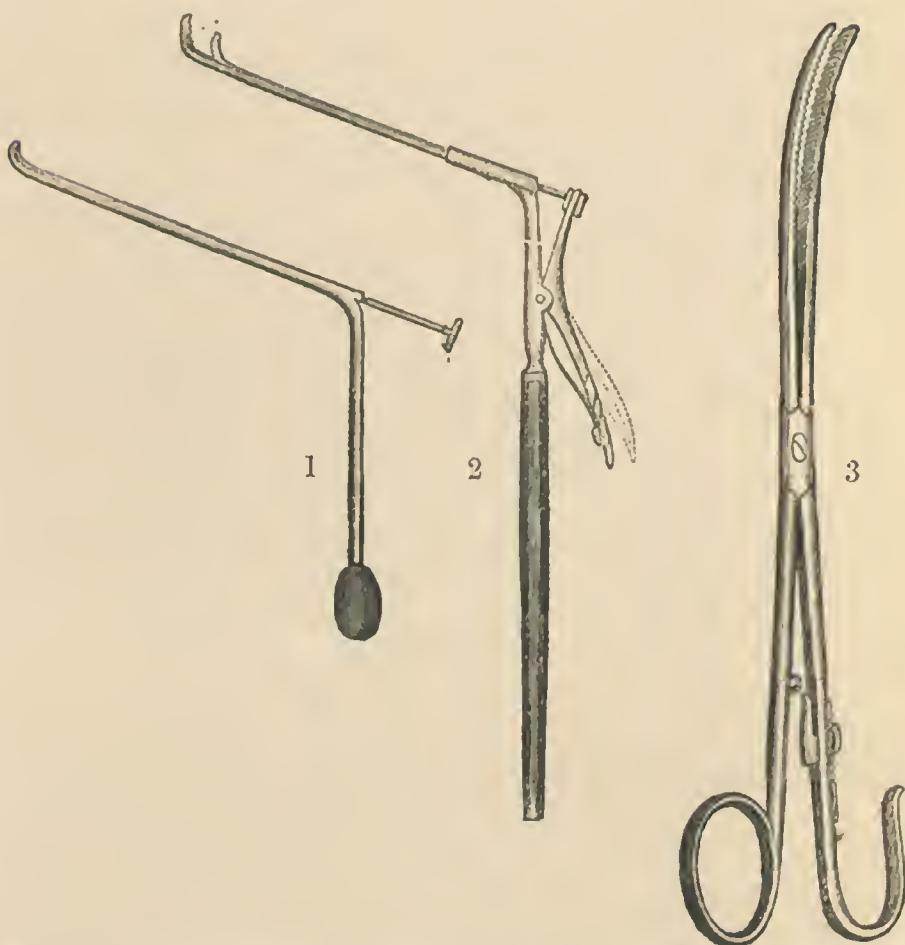


Fig. HH.—INSTRUMENTS FOR SECURING A NASAL POLYPUS at its base prior to passing the wire loop around it (half measurements). Nos. 1 and 2 are for small growths. No. 3 is simply a self-holder adapted to an already well-known form of forceps.

represented in Fig. GG, 2 and 3) is most useful, being more rapid and permanent and less painful than

* "Cases illustrative of the value of Galvano-Cautery in Diseases of the Throat, Nose, and Ear, with description of a convenient battery."

mineral forms of caustic, in tertiary specific ulcerations of the fauces and soft palate, especially in cases of perforating ulcer, and when the disease is congenital or hereditary, or where there is a combined scrofulous diathesis ; and also for destruction of varicose veins of the pharynx in chronic pharyngitis.

2. That in diseases of the larynx, except where occurring in the epiglottis, the cautery is inadmissible, since there is great danger of doing serious injury to healthy tissues.

3. That nasal polypi, being first secured by suitable self-holding forceps (varieties are shown in Fig. HH), can be most completely removed by the cautery loop (Fig. GG, 1 and 4), with the minimum of pain and haemorrhage, as well as without risk of injuring surrounding parts.

4. That scrofulous ulcerations, diseased bone, and membranous thickenings or outgrowths in the same region, can be treated with equal success.

5. That after removal of aural polypi in the ordinary way, the cautery may be applied with a fine-pointed instrument (Fig. GG, No. 3) with advantage to the base, with a view of preventing recurrence.

6. That the cautery (with the same cautery-joint) may be useful in those cases in which it is desired to make a permanent perforation in the tympanic membrane.

In operations on the nose and ear it is necessary, or at least desirable, to leave the passage guarded from the risk of being scorched by the heat of the wire. In aural cases a small ivory speculum answers the purpose ; and for the nose, the author, acting on an idea suggested by Mr. Bryant's female urethral

dilator, has had made by Mr. Krohne an ivory cautery protector (Fig. II), which well answers the purpose where the operation is near the orifice. For polypi, &c., an Elsberg's dilator, with the blades lengthened and made of ivory, has been used with success.

Further remarks regarding operative procedures on the larynx generally may be necessary when we come to speak of the treatment of the various diseases in which they are required.

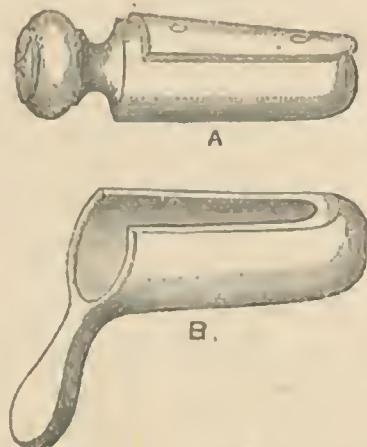


Fig. II.—AUTHOR'S IVORY NASAL CAUTERY PROTECTOR (full size). A fits into B, and is withdrawn after introduction of the instrument into the nostril.

Dietetics and Hygiene.—A chapter on the therapeutics of throat diseases would be incomplete without some remarks respecting the dietetic and hygienic measures necessary for the treatment and prophylaxis of those affections. With respect to such measures, it must be remembered that in throat affections three distinct functions are interfered with; viz., deglutition, respiration, and vocalization. The principal difficulty in their treatment lies in the impossibility of giving them perfect rest, two of them at least being vital functions. The great object, however, must be to give each as little work to do as possible.

Deglutitory.—In all cases of relaxation and congestion of pharyngeal mucous membrane, every form of pepper, spices, and hot condiments should be avoided, as should purely astringent lozenges, the effect of which is to increase the dryness which is an almost invariable accompaniment of the relaxed condition. The best lozenges for relieving the relaxation and dryness without producing irritation are the effervescent astringent voice lozenges of Cooper, of Oxford Street, and the compound red gum or eucalyptus lozenges of Corbyn, of Holborn, both made in the first instance at the suggestion of the author.

Ice will often be found most grateful to the throat, but, in order to avoid injury to the digestion, it should always be taken midway between meals, and not just before one.

Soft food is often absolutely necessary in throat affections, and it is also frequently essential that such food should be given in the most concentrated form, in order to give the deglutitory function as little work as possible. In the author's opinion, Liebig's concentrated meat is not of much value where fresh meat can be procured. A very excellent form for the administration of nourishment, and one which can be employed even in very considerable obstruction of the gullet, consists of a raw egg broken into a cup, seasoned with a little salt and vinegar, and swallowed whole and unbroken like an oyster. The yolk generally breaks at the moment of swallowing, and thus forms an agreeable and soothing emollient application to the throat, at the same time that it is a valuable and quickly digested nutriment. An egg can frequently be swallowed in this way, when it would be rejected if

taken beaten up, and spoilt by the admixture of wine or milk. In cases where there is a return through the nose of fluids taken, drinks should be thickened with arrowroot, Iceland moss, &c., and the patient should be directed to take them in gulps rather than in sips.

Artificial Feeding. — Whenever the function of swallowing is so impaired that artificial nutrition is necessary, it is desirable, if possible, that such feeding should be administered through the stomach by means of an œsophageal tube rather than *per rectum*. When this plan is adopted, food need not be given oftener than twice, or at most thrice, in the twenty-four hours. The same may be said of rectal enemata. Food so administered should not be given in too concentrated a form. There can be no doubt that much harm is done by the practice of giving essences of beef or milk stronger than the intention of the manufacturers. In the experience of the author, two eggs, with six or eight ounces of good beef tea, and possibly a little brandy, as well as any medicament necessary for the case, administered twice or at most thrice daily, constitute an all-efficient diet for artificial nutrition. The food should be given at a temperature of 90° to 100° Fahr.

Respiratory. — Sudden changes of temperature are always hurtful to the respiratory passages. Draughts of air striking against the throat externally, or a very sudden change of breathing atmosphere, particularly if just after use of the voice, are most prone to set up congestion of the larynx. A cold, damp atmosphere is the worst, whereas dry winds, even if cold, are often best, as the experience of those who have tried the Davos-platz in the Engadine proves.

Warm, damp south-west winds, though agreeable in laryngeal catarrh, are often hurtful to the pharyngeal relaxation, which induces, accompanies, and keeps up the laryngeal disease.

The great object must be to change the particular atmosphere which is most obnoxious. If cold, damp air is hurtful, warm inhalations are indicated, and a corresponding change of climate. The author's opinion of the winter health-resorts of England is not a favourable one, and he believes that if the patient cannot winter at his own home with home comforts, or in London, which is warmer, drier, and better drained than any small town can be, he had better go out of England altogether. As has just been said, all sudden changes are most injurious, and it does not much matter whether the change be from a dwelling-house, theatre, church, or ball-room.* With regard to change of clothing, it is by no means always necessary for the patient to swathe himself in flannel; but he should make a difference, even though it be a slight one, according to the atmosphere, as far as clothing is concerned. There is no country where such common-sense precautions are less heeded than in England, and none where they are more necessary. In Russia, and other cold countries, all out-door clothing is removed the moment the wearer enters a building. These remarks are equally applicable to the reverse practice of wearing too heavy clothing in hot weather.

* In a ball-room there is superadded to the change of temperature the danger of inhaling dust and actual mineral particles from dresses, artificial flowers, &c. Many patients complain of throat-trouble only after exposure to this influence.

Respirators are often of considerable value as preventives against cold from change of temperature, and are useful in most cases where the inhalation of unmitigated atmosphere causes irritation of the throat. When a patient is able to breathe entirely through the nostrils, a respirator is of but little use, as Nature has provided in the nasal passages an efficient respirator for herself, by which the air is warmed and deprived of its noxious properties before it reaches the throat. A great deal of respiration is, however, necessarily carried on through the mouth, especially during conversation, and it is under such circumstances that the use of a respirator will be found especially grateful and valuable. The principal conditions in which the respirator is useful were well pointed out in a leading article in the *British Medical Journal*, March 3rd, 1877, in which the following remarks occur:—"In fogs the black carboaceous particles are most irritant to the lining membrane of the air-tubes, and a secretion of mucus is Nature's method of sheathing the tender membrane against these irritant particles. Many of them are caught on the sides of the nasal air-passages, while others become entangled in the mucus of the bronchi and bronchiæ, as is evidenced by the black colour of the expectorated phlegm. In such fogs many of those who do not resort to respirators will be found with their handkerchiefs over their mouths, converting that useful article into a makeshift respirator. The particles are largely intercepted by the respirator *in transitu*, and still more if the respiration be carried on through it chiefly, and but to a small extent through the nostrils. . . . The respirator is exceedingly useful, too, under the following circumstances. In

cold winds—especially when facing them—the cold air finds its way into the mouth at every opportunity, and so communicating with the air respired, or with the residual air in the thorax, lowers its temperature, and then hyperæmia of the lining membrane of the air-tubes is produced. The respirator will be found a great preservative under such circumstances, and will prevent many a cold, sore throat, and hoarseness. In driving in cold weather it will be found to be very comfortable at the time, and desirable in its protecting power against unpleasant after-effects ; also in walking out with companions, when talking is necessitated, the respirator will be found very agreeable by those who find cold air so breathed to produce disturbance in the respiratory apparatus." The great drawback, especially with ladies, to the respirator is no doubt its unbecoming appearance, but the patient should consider whether that is a sufficient reason for the rejection of a valuable protective agent. The "respirator-veil" of the author possesses the advantages of the respirator, while at the same time presenting little of its unsightliness. This veil, which was described and figured in the same journal, Nov. 18th, 1876, consists of an ordinary piece of blonde, about twelve inches deep, over the lower four inches of which is sewn a double thickness of silk gossamer. By wearing this as a veil, mouth, nostrils, and ears are sufficiently and equally protected from cold, the external atmosphere being warmed in the chambers formed by the layers of gossamer. To prevent the veil from becoming unpleasantly damp by the moisture of the breath, that part which comes over the nose and

mouth may be stiffened by a layer of wire-gauze, so as to stand away from the face, and it may be prevented from blowing up by a piece of elastic braid threaded through the lower hem. The so-called "invisible" respirators are of little value, except for compelling nasal respiration. A very ingenious adaptation of the respirator to remedial purposes has been described by Dr. W. Roberts, of Manchester, under the name of the "respirator inhaler."* In appearance it much resembles the ordinary respirator, but it may be impregnated with medicaments, so that the wearer is constantly inhaling a medicated atmosphere. The unsightliness of the ordinary respirator has been somewhat modified by Messrs. Maw, who, instead of the ugly and conspicuous black cover usually adopted, now make some of their respirators with drab cloth, which renders the instrument, especially if worn under a thin veil, almost imperceptible, and at least less unsightly. Of the use of the respirator in chronic laryngitis, Dr. Cohen, of Philadelphia, thus speaks †:— "Where the patient is exposed to the inhalation of irritant gases or vapours, or solid particles floating in the air, he should wear a respirator at the time, or cover the nostrils and mouth with a veil, or keep the mouth closed and protect the nostrils by a tiny wad of cotton, just delicate enough not to interfere with respiration. In some cases attended with frequent cough, the respirator or its substitute should be in constant requisition to modify the effect of the oxygen of the air, which is sometimes too irritating for the over-sensitive mucous membrane. The value of the respirator in these cases cannot be appreciated by

* *British Medical Journal*, February 3rd, 1877.

† "Diseases of the Throat," p. 375. (New York, 1872.)

those who have not witnessed its beneficial effects for themselves."

Vocal.—For those who use the voice it is frequently necessary to give the vocal function rest, and we are often obliged to prohibit the use of the voice, especially to those patients who have to exercise it professionally. This, however, is not universally the case. It would appear that reading aloud, talking in noisy vehicles, or where there is much surrounding noise, is more injurious to the voice than public speaking. Again, many singers complain of diminished range, both in their lower and higher notes, without there being any perceptible impairment of the middle register. Directions for the modified use of the voice must be directed to these points, and particular attention must be given in order to ascertain whether the defect in the voice may not be due to faulty voice production. This subject having been elsewhere* treated at some length, it is not necessary here to do more than refer to it.

Where there is spasmodic vocal enunciation, or where there is the slightest ulceration or abrasion of the vocal portion of the larynx, absolute silence must be enjoined.

Mineral Waters and Baths as therapeutic adjuvants.—The benefit to be derived from treatment of disease by the aid of natural waters is by no means so highly appreciated by practitioners in England as abroad. One reason for this incredulity may doubtless be found in the fact that, while, perhaps, too much is claimed for hydrotherapeutics by our Continental *confrères*, the results of treatment by those

* "Medical Hints on the Production and Management of the Singing Voice." Third edition. (Chappell & Co., 1877.)

native springs which we possess in England have not so far encouraged practitioners to extend their experience. Within the last few years, however, great advance has been made in this branch of treatment, and it is proved beyond doubt that the action of natural mineral waters does not depend solely, or even to any great extent, on the amount, often very small, of active ingredient which they contain, but is the result of their natural chemical combination, and of their thermal properties. It is this last principle of a natural high temperature that is to be found in almost every water of any value for bath treatment, especially of those suited to diseases of the larynx. The baths of Aix-les-Bains, Cauterets and Luchon, Vichy and Ems, are those which such patients may be recommended to visit;* while those of Challes (Savoie), Bourboule (Mont Dore), and Woodhall Spa, in England, are the best adapted, on account of their therapeutic constituents, for internal administration and for home use. The class of patients who benefit from Spa treatment are mostly those of a rheumatic or catarrhal diathesis, with chronic congestion. Challes and Woodhall are of service, on account of the iodine and bromine which they contain, in all scrofulous and goitrous affections, and Bourboule, on account of its arsenical properties, in cases of granular pharyngitis, enlargement of bronchial glands, and where there is any asthmatic tendency.

* Aix-les-Bains is to be preferred, in the author's opinion, for the one reason of the great abundance of the supply (one million gallons per day) of water, and for the perfection of every detail of the bath establishment. For further information refer to "The Spas of Aix-les-Bains," by Dr. F. Bertier. (Churchill, 1877.)

CHAPTER VI.

DISEASES OF THE PHARYNX AND FAUCES.

THE pharynx, as generally considered in surgical practice, is that portion of the alimentary canal, a part of the posterior wall of which is seen at the back of the mouth, and which opens into the oesophagus at a point bounded behind by the fifth cervical vertebra, and in front by the posterior portion of the cricoid cartilage. It is very usual, in describing disease of the pharynx, to include also the appearance of the soft palate, with its pendulous process, the uvula, and the tonsils, situated one on each side of the arch between the anterior and posterior pillars. There can be no objection to such a plan, but, on the contrary, there is much to be advanced in its favour, if it be remembered that the pharynx commences much higher up than is seen on mere ocular inspection of the open mouth, and that its upward limit is at the basilar process of the occipital bone. Since, however, this portion can only be seen by inspection in a diametrically opposite direction to that for witnessing the lower part, it is better to consider disease of these two portions under two heads. The first will include morbid states of the pharynx and fauces, with subdivision of affections of the uvula and of the tonsils; the second will include disease of the upper part, to

be here called the naso-pharynx. Under the latter head attention will mainly be given to catarrhal inflammation, many other morbid states coming under the category of diseases of the nose, into which it is not proposed to enter at length in these pages.

The appearance of the healthy pharynx is too well known to require detailed description. There may, however, be considerable variety in the size of the arch of the palate in the space between the pillars of the throat, and in the depth of the post-uvular space.

Further, it should be remembered that even in healthy throats the pillars of the fauces are often more intense in colour than the rest of the mucous membrane. The tonsils, when normal, should hardly be seen, but they may be somewhat enlarged without causing any morbid symptom. The same may be said with regard to the uvula. This often appears relaxed, but in considering this condition the relations between the height of the arch of the soft palate and the length of the uvula must be borne in mind, for what is enlarged in one patient may be healthy in another.

The condition of the faecal secretion must also be noted in looking at the pharynx, though there may be much tenacious mucus unconnected with local disease, and merely the result of gastric derangement.

The glandules of the pharynx which are affected in the glandular or follicular form of this affection are of two kinds,—acinous and follicular. The acinous glands are principally found on the posterior and nasal surfaces of the pharyngo-nasal cavity; they become rarer on the posterior surface of the pharyngo-buccal cavity, where they appear as small slightly

elevated prominences. They are small and rare in the pharyngo-laryngeal region. Many of them are found on the posterior superior surface of the velum, especially the posterior aspect of the uvula. The follicular glands are found isolated in various regions of the pharynx, near the posterior nares, and the orifice of the Eustachian tubes. According to Kölliker, there is an agglomeration of these follicles which extends from one Eustachian tube to the other. There are also found in the naso-pharynx, sinuses and depressions which are probably the remains of destroyed follicles.

The pharynx is liable to catarrhal inflammation, which may be acute, subacute, or chronic, and which forms the affection usually known as "sore throat."

Disease of the pharynx and fauces affects primarily the function of deglutition. If the isthmus of the fauces be narrowed, or if the antero-posterior space of the lower pharynx be diminished by abscess or new growth, oral respiration will be interfered with, and if the naso-pharynx be involved, nasal respiration will also be impeded, and the senses of hearing, taste, and smell will be more or less impaired. Resonance and tone of voice are altered by pharyngeal disease, as also is speech (articulation), but phonetic quality is not necessarily affected thereby.

1. ACUTE PHARYNGITIS, CYNANCHE PHARYNGEA, ANGINA SIMPLEX VEL CATARRHALIS (Fig. 12, Plate II.).

ETIOLOGY: Predisposing Causes.—Occupation, season, a low state of the system, the arthritic dia-thesis, previous attacks of a similar nature, and chronic intemperance.

Exciting Causes.—Most usually a "cold," the main

cause of which is exposure to draughts of cold air striking on an overheated body. The disease is thus common in people engaged near hot furnaces, or in those who, working in ill-ventilated and over-crowded rooms, are exposed to draughts of cold air, or who go out of such rooms into a suddenly changed atmosphere. Damp, cold air is particularly likely to cause inflammation of the throat ; hence the larger proportion of such cases occur in the spring and autumn, or in the damp of a thaw after hard frosty weather. Use of the voice under unfavourable conditions may lead to pharyngitis, whether followed or not by inflammation of the larynx. Irritant poisons, boiling water, and scorching heat will excite pharyngitis.

It is curious to note how variously different persons will be affected by the same causes ; thus, while one will suffer from a head cold, another, with similar exciting cause, will be attacked with pharyngitis, and a third with laryngitis, and in course of the disease the head cold may descend to the throat, or the throat inflammation pass off as a nasal catarrh. Children are very liable to simple catarrhal sore throat, the local tendency passing off as they grow up, but too frequently the predisposition is manifested in a liability to more serious catarrhal disorders.

SYMPTOMS: A. **FUNCTIONAL. Voice.**—Thick and husky in enunciation, but no actual vocal hoarseness nor aphonia unless disease extend to larynx. The voice is quickly fatigued, and exercise thereof may be even painful.

Respiration.—No dyspnoea, but nasal respiration often obstructed.

Cough.—Very rarely true cough. A constant ten-

dency to hawk or *hem*, accompanied by slight expectoration of viscid, transparent, more or less greyish pellets of mucus, occasionally streaked with blood.

Deglutition.—Swallowing in acute form always painful, or at least accomplished with discomfort.

Hearing.—Usually impaired in cases where there is tonsillar enlargement, or where the disease extends into the posterior nares.

The **Senses of Taste** and of **Smell** may be both temporarily impaired.

Pain, independently of exercise of functional action, is a strongly-marked symptom of pharyngeal inflammation. There is very generally first described a stinging or shooting, followed by a sensation as of great tightness and constriction, and of the constant presence of a foreign body in the throat. Pain in the tympanum, conveyed along the main trunk of the glosso-pharyngeal to Jacobson's nerve, is a frequent symptom of pharyngeal angina.

B. PHYSICAL. **Colour.**—Increased, according to severity of attack, from a simple bright pink to a livid scarlet. Uvula and fauces may be translucent from œdema, and the hyperæmia in this region is always greater than in the lower portion of the pharynx.

Form, &c.—Modified according to amount of sub-mucous or serous infiltration. Texture roughened or granulated, owing to prominence of glands; loss of tissue rare, unless the attack be due to toxic causes.

Secretion.—At first arrested, causing the throat to feel dry and rough, or as if a hair were in the throat; later, viscid and tenacious; lastly, muco-purulent or purulent.

C. MISCELLANEOUS. **External and General.**—Usual

constitutional, premonitory, and concurrent symptoms of inflammatory catarrh, modified according to severity of local disease. Temperature is often increased out of proportion to gravity of attack ; digestive system almost invariably at fault, bowels being constipated ; urine high-coloured or loaded with lithates ; tongue furred, and breath foul. Frequently pain in muscles and joints of the body generally, and headache an almost constant symptom.

Commemorative.—Disposition often inherited ; and not unfrequently associated with arthritic or dathous diathesis.

PROGNOSIS.—Favourable, unless suppuration (pharyngeal abscess) of deeper tissues supervenes, or unless it extends to the larynx. When sore throat passes into a “head cold,” the prognosis is always favourable. Convalescence is frequently delayed by the disease becoming chronic.

TREATMENT: Constitutional.—Free purgation, especially by salines preceded by Dover's and grey powder overnight ; aconite in one-drop doses, until circulation is lowered and perspiration induced. During convalescence, alkalies and vegetable tonics (Form. 52, 57, 59, 61).

Local.—Guaiacum lozenges relieve capillary engorgement ; probably, also, act constitutionally where the diathesis is arthritic. Ice taken in small pieces, substituted according to individual experience by mouth-washes or gargles of warm water more or less medicated. In pharyngeal disease, steam inhalations are almost always fatiguing, and seldom afford proportionate relief. Caustic applications, though much in vogue, are believed never to be of utility, nor mineral

astringents, except in the earliest stages. Externally, wet compresses are of great service. Strong counter-irritations decidedly harmful, nor, in the author's experience, are leeches ever indicated (Form. 15).

Operative.—If œdema be excessive, scarification may be called for, or ablation of the uvula may be necessary, on account of actual discomfort or of irritation of the larynx. The latter operation is, however, better deferred until subsidence of acute attack, from possible tendency to sloughing, and because during an inflammatory attack it is not possible to judge how much of the relaxed tissue should be removed.

Diet.—Unless the patient show signs of exhaustion, food should not be given at more frequent intervals than usual, although refreshing beverages and simple succulent fruits may be allowed in moderation. In order to give rest to function of deglutition, all food should be bland, semi-solid, and warm. Stimulants are by no means necessary, the favourite port-wine treatment being a fallacy.

Hygiene.—Predisposing causes, being carefully ascertained, must be naturally guarded against; but, of all things, people subject to catarrhal sore throat should avoid constipation. Spring and autumn being most favourable to this form of angina, patients should particularly guard against too suddenly changing clothing and habits of life indicated by varying seasons. When attacks are frequently recurrent, a course of treatment at Aix-les-Bains has a powerful effect in diminishing the patient's liability. Cold baths, and especially external local douching with cold salt and water, appear to act as prophylactics against "catching sore throat."

PHLEGMONOUS PHARYNGITIS.—HOSPITAL SORE THROAT.

This term has been given to that form of acute pharyngitis which occurs in persons whose system has become much reduced by hard work under exceedingly unfavourable sanitary conditions of the inspired atmosphere, as well as, in some instances, of food and water-supply. Thus, amongst its causes may be mentioned work in the dissecting-room, absorption of septic material from unhealthy wounds, the nursing of patients suffering from erysipelas and various fevers, exposure to bad drainage, unhealthy water, &c.

Probably the pharyngitis sometimes occurring in patients suffering from small-pox, typhus, and typhoid fevers, is really of this nature. The angina of scarlet fever, however, is to be considered as a distinct symptom, occurring at an early period in the course of the disease.

The particular diagnostic sign of this form of pharyngeal inflammation is that it is by no means confined to the areolar tissue, but may lead to inflammation of the deeper structures, and is very apt to take on a sloughing character: occasionally there are witnessed severe haemorrhages.

The parenchyma of the tonsils is not, as a rule, affected; and when these glands ulcerate, it is not, as in ordinary tonsillitis, from the bursting out of internal suppuration, but is caused by the attrition and consequent irritation of the highly-inflamed surfaces, leading to superficial gangrene of varying extent.

The attack is usually ushered in by a feeling of illness, with languor, headache, &c. Then follows often a rigor with high fever, and delirium. The

general course of the disease, when its origin is unassociated with some specific poison, is very much that of erysipelas.

The constitutional symptoms being of much greater import than in simple pharyngitis, general treatment must receive special attention, while local measures are not neglected.

Great importance must be attached to tonics, especially iron, chlorate of potash, and bark, and stimulants in large quantities are often indicated.

It should not be forgotten that the prognosis is usually most unfavourable, there being a very great tendency to sloughing, to extension of the disease into the larynx, and to general septicæmia. The surgeon is often tempted to make incisions and scarifications to relieve pressure, but such wounds almost invariably slough.

Tracheotomy is not unfrequently called for, on account of dyspnoea from extension of œdema into the larynx, but, unfortunately, in too many instances the patient fails to rally after its performance.

SUBACUTE PHARYNGITIS (Fig. 13, Plate II.).

All the functional symptoms of the acute disease, modified in intensity, are present in this form. It is often seen in association with the milder exanthemata, as chicken-pox and measles (fig. 16).

Voice, easily fatigued and somewhat hoarse, due to laryngeal irritation.

Cough, tickling and irritable, but seldom or never painful.

PHYSICAL SYMPTOMS.—**Colour**, increased, but by no means uniformly over whole surface; for instance, the pillars of fauces and uvula may be hyperæmic, while

the rest of the surface is normal, or one side of the throat only may be red, while the other is unaffected.

There may be some *swelling* and *thickening*, and there is generally some disorder of secretion; it being increased in quantity, and changed in quality from a clear viscosity to a thick yellowish, or even greenish fluid. Constitutional symptoms but slight.

TREATMENT being commenced, as is always necessary, with purgatives, may be almost confined to local measures. Guaiacum lozenges are most suitable if there is any soreness, or if the pillars of fauces are inflamed; astringent lozenges and gargles are indicated if uvula be part affected (Form. 15, 17, 14, and 5).

With reference to prophylaxis, no person liable to these attacks, seeing the part digestion plays in them, should take sparkling wines, beer, or any fluid containing partially fermented substances.

CHRONIC PHARYNGITIS (Figs. 14, 15, 18, and 19, Plate II.).

This form of pharyngitis must not be confounded with chronic follicular tonsillitis, as is sometimes the case, but from which it is quite distinct. It may occur simply as a sequel of the acute or subacute form, or it may be caused by one or other of the influences about to be mentioned. It may be present simply as a more or less general congestion (fig. 14), with thickening of the pillars of the fauces, and having no distinctive features, except its chronicity, from the subacute form (fig. 13), or the throat may present the appearances which have led to the use of the various terms—granular, glandular, follicular, or herpetic pharyngitis (figs. 18 and 19). Looking on the patho-

logy of the disease as one of venous congestion, leading to more or less enlargement of the follicles of the pharyngeal mucous membrane, the author does not recognize these distinctions, but proposes to consider all these disorders under one heading.

ETIOLOGY.—Chronic pharyngitis may be due to disorders of the digestive system; it is sometimes connected with phthisis or chronic alcoholism; excessive use of tobacco is also assigned as a cause, and in such cases it will generally be found that the subject has been in the habit of frequently expectorating during smoking. With respect to its connection with certain diatheses and diseases in other parts of the body, according to the author's experience, neither acne nor herpes plays an important part as a cause, as has been stated by Isambert and other French authors. He has found many patients the subject of chronic pharyngitis who were not subject to any form of acne or herpes; but seeing that such affections, as well as granular pharyngitis, are due, in some measure, to disorder of the portal circulation, it is not surprising that they should frequently co-exist, and whereas these skin affections require little or no local treatment, it is certain that no form of exclusively constitutional treatment will remove granulations from a chronically congested pharynx. Among the most prolific causes of chronic pharyngitis must be reckoned improper use of the voice. By this expression must be understood not simply improper voice-production, improper use or over-exertion of voice, which may mean forcing—an act entirely controlled by the pharynx,—but also use of the voice, whether rightly or wrongly produced, at improper periods; for instance, during catarrhal

attacks, as in clergymen and actors, with whom the exercise of the function is a professional necessity ; in inclement weather, or under unfavourable circumstances of surrounding noise, causing the individual to speak in too loud a voice, as with military men on the field of battle, open-air speakers, auctioneers in the dust of sale-rooms, and hawkers and costermongers exposed to the influences of noisy streets and vehicles. Certain it is that this affection occurs more frequently in professionally voice-using subjects who have not, as a rule, had proper voice-training.

SYMPTOMS : A. FUNCTIONAL.—**Voice** hoarse, often jerky and out of control. This is not from any want of power of co-ordination of the laryngeal muscles, nor often from any congestion of the vocal cords, which may or may not be present, but from spasm of the pharynx, and from irritation of the superior laryngeal nerve causing a spasmodic action of the tensors of the vocal cords. The voice becomes very quickly fatigued, and suffers deterioration the longer it is exercised, so that a clergyman after his third service will hardly be able to speak above a whisper, and will remain quite hoarse for a day or two. In the author's experience such trouble is more frequent in those subjects who use the voice only occasionally ; thus, a clergyman having daily service, or a barrister in full practice, will be less liable to be affected than he who works the voice on Sundays only, or who makes occasional harangues.

The *singing voice* loses in power at either limit of the register, and is frequently out of tune, of which the patient is conscious.

Respiration.—Oral respiration unaffected, but nasal

breathing often obstructed. Breath-taking, in use of the voice, generally described as laborious and painful.

Cough. — Frequent, irritable, hacking, with expectoration of pellets of mucus from the supraglottic portion of the larynx, and with occasional streaks of blood from the naso-pharynx; there is also not unfrequently epistaxis, giving marked relief to local symptoms.

Deglutition. — Frequent desire to swallow, arising not only from presence of quasi-foreign bodies, but also to get rid of accumulated mucus. Pain experienced in swallowing hot fluids and piquant dishes.

Hearing. — Frequently impaired, from the collection of viscid secretion about the pharyngeal orifices of the Eustachian tubes, and occasionally from extension of the congestion or inflammation to the middle ear.

Senses of Smell and of Taste but very slightly affected, unless disease has extended to the naso-pharynx.

B. PHYSICAL. — With regard to the local condition of the surface in this disease, some authors describe it as one of ulceration with granulations. This is a mistake; there is no ulceration. There is frequently depression from atrophy of some portions of the submucous tissue, with elevation of other parts from presence of weak granulations, but nowhere is there actual loss of surface-tissue. This atrophy is particularly noticeable in the track leading up to the mouths of the Eustachian tubes (showing as a broad whitish path on either side, fig. 19), the whole of the rest of the surface being covered with granules of varying sizes.

Colour. — The mucous membrane is always con-

gested, but not always uniformly so; thus it is very common to see only the anterior arch and the lower part of the posterior pillars heightened in colour while the rest is normal (fig. 14, Plate II.). Where, as in this case, the disease is chronic, the whole mucous membrane is seen to be traversed with injected capillaries, or the whole surface may be red and the submucous tissue so infiltrated as to greatly interfere with nasal respiration, as in figs. 13 and 15. When the disease is advanced to the granular stage, the posterior pharyngeal wall is seen to be uneven in surface and mottled in colour, with numerous strongly-marked tortuous lines of engorged veins and capillaries (figs. 18 and 19). The pillars of the fauces are usually red, with whitish tracks close to the posterior arch, as above mentioned, leading towards the orifice of the Eustachian tubes (fig. 19). The enlarged glandules appear as red, pale-rose, or yellowish semi-transparent prominences. The depressions are often covered with frothy saliva or more or less tenacious mucus.

Form and Texture.—Alterations of form are but of surface character. Deposits are often seen on the uvula which look like tubercles: they are merely caused by arrest of the follicular secretion, and are not nodules of tubercle. This condition can be seen in Plate IV., fig. 32.

Secretion of the follicles is at first excessive, and there is considerable increase of fluid in the mouth, so that the patient complains that when speaking he does not know how to get rid of his saliva. Very speedily, however, with continuance of stimulation, the ordinary catarrhal changes take place, the mucus becoming more viscid, tenacious, and even muco-

purulent. Lastly, in some cases, the follicles become worn out, as it were, atrophy of the mucous membrane ensuing, and the throat exhibiting a dry glazed condition, giving rise to the state known as *pharyngitis sicca* (fig. 37, Plate V.). When this dryness exists, foetor of ex-spired breath is usually noticed.

C. MISCELLANEOUS.—The digestive system is always disordered. In numbers of cases, disturbance of the portal circulation, which is an exciting cause, seems to be induced, or dyspepsia, which is certainly increased with the advance of the disease. This is probably due to constant deglutition of disordered mucus favouring the accumulation of flatus in the stomach. It is likely also that the relation of the glosso-pharyngeal nerve with the pneumo-gastric may in some measure account for the stomach derangement. This would also explain the pain and fatigue in breath-taking, while irritation of the superior laryngeal would account for inability to produce high notes, and for the inequality and impurity of tone found in this condition without congestion of the larynx.

TREATMENT: Constitutional.—Attention to alimentary canal by mild saline purgatives, such as Friedrichshalle, Bitter Wasser, Hunyadi Janos, or Pullna water, will be found of great value. Vegetable tonics are of use, and may be advantageously combined with aperients. A course of arsenical waters will in many cases be beneficial, especially those of Bourboule, by Mont Dore, which were first brought under notice and prescribed in England by the author very many years ago (Form. 59).

Local.—The topical application of astringents and the use of astringent lozenges is often of service where

the congestion is but slight, but when there is capillary engorgement with granulations the author has seldom found such measures sufficient for the purpose, unless preceded by destruction of the enlarged vessels which supply blood to the follicles. On these vessels being divided and obliterated by means of a fine galvano-cautery point, the follicles will be seen within a very short time to shrivel up and disappear. Where the galvano-cautery is not available, the same end may be obtained by incising the vein transversely with a long-pointed knife or lancet, and then applying a fine caustic point, with a little pressure to the cut spot. Many laryngologists advise destruction of the granules by caustic pastes (Mackenzie), by cautery wires (Michel), by blunt cautery-knives (Reisenfeld). Such a plan does, however, but treat an effect, and cannot remove the cause. Among local applications recommended by various authors are nitrate of silver, chloride of zinc, sulphate of copper, &c. (Form. 14, 43, 47, and 44).

For impairment of the hearing, application of the air-douche by catheter or Politzer bag will usually be found effectual in clearing away secretion and maintaining patency of the Eustachian tubes. When, however, the disease has extended into the naso-pharynx, causing congestion and thickening of the coverings of the turbinated bones, with disorder of the mucous secretion, vapour inhalations by the nostril as well as by the mouth, according to directions at page 57, the use of the posterior nasal douche, and local applications to the nasal passages, are called for. (See Chapter VIII.)

In very many cases relaxation of the uvula, brought about by the same causes as the complaint of which such a condition is but a symptom, will continue

to keep up or to re-induce local irritation, and must then be effectually treated. This subject will be considered under the special heading of affections of the uvula.

Hygiene.—The causes having been ascertained, must of course be avoided. Those who use the voice much must be compelled to give it rest for a time, and must be warned that unless they desist from its exercise under unfavourable conditions, a relapse is certain to occur. A few simple lessons in the first principles of respiration in relation to elocution are often most necessary. The use of alcoholic stimulants and tobacco should be interdicted, as well as the taking of condiments, hot spices, &c. Any co-existing diathesis, as the darthous, herpetic, scrofulous or tuberculous, must receive its appropriate treatment, and a course of waters at Vichy, Mont Dore, Cauterets, or Aix-les-Bains, according to the constitutional condition, may greatly assist in consolidating a cure. In some subjects, in whom the catarrhal influence is strong, it may even be advisable to recommend the patient to pass a winter or two in the South of France, Italy, Algiers, or Egypt. It is necessary, however, to insist with Mandl that such measures are only useful when “not only the inflammatory phenomena but also the granulations have disappeared.”

ULCERATION OF THE PHARYNX.

According to the author's experience, ulceration of the pharynx seldom occurs as the result of a simple angina. It is found, however, as a sequel of the form of pharyngeal inflammation known as hospital sore-throat, or as the result of a specific dyscrasia, such as

syphilis, scrofula, cancer, or tuberculosis, these causes occurring in the frequency in which they are here enumerated.

SYPHILITIC ULCERATION OF THE PHARYNX :
SECONDARY SYPHILIS (Figs. 20, 21, 22, and 23,
Plate III.).

The affection of the pharynx occurring during that stage of syphilis known as the secondary, that is to say, in a period embracing about a year after exposure to the primary infection, is not really an ulceration at all, though there may be, and often is, erosion of the mucous membrane.

The secondary manifestation of syphilis in the pharynx is characterized by the presence of symmetrical congestive patches (erythema) submucous infiltration, and mucous tubercles, followed by exudation in the form of *plaques*, or by formation of condylomata, on the pillars of the fauces, tonsils, velum, and uvula, as well as on the lining of the buccal cavity, and on the edges and tip of the tongue. The disease may extend from the fauces and naso-pharynx to the Eustachian tube, and may also be present in the anterior nares ; but it seldom attacks the posterior pharyngeal wall.

These *plaques* appear in the pharynx as bright red crescentic or circular blushes, in the centre of which may be seen a white opaline spot, with an appearance very like that presented by what artists call "glazing." As the disease advances, this opaline glazing becomes thicker and greyer, and its surface looks as if in folds. When appearing on the tonsils, the characteristics of the *plaques* are less marked, as these glands become simultaneously hypertrophied and inflamed, and the

products of their secretion, whitish-grey in colour, may cause some confusion.

It is not necessary to describe the subjective symptoms of secondary syphilis of the pharynx, the strong diagnostic point being the local evidence of the disease. This is characterized by symmetry of these patches; not the symmetry of Dr. Moxon, arising from the fact that the throat, in common with the rest of the body, is composed of two symmetrical halves, but in many cases by the veritable "Dutch garden symmetry," referred to by Mr. Hutchinson.* This is well illustrated in all the figures of this disease in Plate III.; especially in the first and fourth (20 and 23), where it will be seen that even on the uvula the patches are almost geometrical in symmetry; and such illustrations are, indeed, not uncommon, but typical.

A peculiarity of this disease, when seen very early in its course, is that the congestion, or at any rate some part of it, is masked, as it were, so that on first view of the throat the surgeon may be in doubt as to its specific nature. If, however, the throat be a little irritated by the finger, or with a brush, the distinctive character will at once be intensified, much in the same way as a skin-rash under similar circumstances will be more readily diagnosed by slight surface-friction.

The history of the case, and the co-existence of a squamous or roseolons cutaneous eruption, will confirm the diagnosis. There is not unfrequently considerable rise of temperature on the first approach of this form of sore throat.

The usual period of the first appearance of these

* Discussion on Syphilis: *Pathological Transactions*, vol. xxvii.

secondary manifestations is from six weeks to six months after the primary contagion.

TREATMENT.—This consists essentially in frequent caustic or resolvent applications, limited to the exact area of each patch of erosion or mucous deposit. In some cases iodine is of service, in others sulphate of copper is efficient; but the author's experience leads him to rely almost solely on the daily use of nitrate of silver in the solid form, as recommended on page 69, applied accurately to each diseased patch. Even after all spots are healed, the patient should be carefully examined once or twice a week, and be treated with renewed energy on recurrence of the slightest relapse.

Some authorities are of opinion that the cases of syphilis in which the secondary manifestations are most severe are least prone to suffer from later ravages. As far as the throat is concerned, there can be but little doubt that this later immunity is in proportion to the efficacy and persistence of treatment during the earlier stages of the disease. Especially is this the case if a mild mercurial course, never reaching to the verge of salivation, is pursued concurrently with local measures. The tendency to salivation is much diminished if the patient is directed to carefully cleanse his teeth with more than usual vigilance, and especially after each meal. The author's favourite form for the administration of mercury at this stage of syphilis is in five-grain doses of the compound calomel, or Plummer's pill, once or twice daily. He is aware that in this view as to the importance of mercurial treatment he is supported by most syphili-graphers, although Dr. Morell-Mackenzie does not consider mercury necessary at any stage of the disease.

at which the patient comes under treatment for affection of the throat.

It is in secondary syphilis of the pharynx that gargles and mouth-washes are to be preferred to lozenges, which in these cases act injuriously on the mucous membrane, already susceptible to erosion. Where there is pain from extension to the ear, with deafness, inhalations, used in manner No. 2, page 57, are beneficial; when the mucus in the nares is apt to become inspissated, emollient applications and nasal douches may be called for (Form. 2, 6, 8, 9, 10, 23, 25, 68, 49, 50, and 51).

Smoking should always be interdicted. Too much care cannot be enjoined against the possibility of communicating the contagion to others. The diet must be non-irritant, and, both on general and local grounds, influences calculated to induce catarrh must be guarded against.

It is important to note that operations, such as excision of an enlarged tonsil, or ablation of an elongated uvula, should not be performed during the course of secondary manifestations in this region, since the raw surface is almost sure to take on afresh the diseased condition.

TERTIARY SYPHILIS (Figs. 24, 25, and 26, Plate III.; Fig. 17, Plate II.; and Figs. 39 and 40, Plate V.).

The tertiary form of syphilis, which occurs in the pharynx at a period of from two to five years up to any length of time after primary infection, is characterized by true ulceration or loss of tissue, and is, according to modern views, always the result of degeneration of gummatous deposit. In the earlier stages, ulceration

is generally confined to the pillars of the fauces, especially at their junction with the tongue, to the uvula, and to the velum. In the latter situation, a red boggy patch is often seen on the buccal surface, which will, if unchecked, speedily lead to perforation. In such a case the ulceration has commenced on the posterior surface of the soft palate, and may often be seen and treated with the rhinoscope before perforation has taken place (fig. 40, Plate V.). Ulceration also occurs, generally in the median line, in the hard palate, and may often be found just behind the upper incisor teeth. It is seldom that the posterior wall of the pharynx is attacked by ulceration earlier than five years after the first infection; but the author recently saw a case, in consultation with Mr. Lund, of Manchester, in which the disease had certainly not existed three years. When the tongue is ulcerated, it is usually in the median line, or as longitudinal fissures. As the ulcers heal, the surface assumes a peculiar bluish glazed appearance (fig. 26, Plate III.). In both secondary and tertiary syphilis a complaint is often made that the tongue feels too large for the mouth, and on examination this organ will be frequently seen indented by the teeth. Ulcerations of the edges of the tongue are often excited by irritation of decayed stumps.

The subjective symptoms of this disease are frequently not very well marked when the pillars of the fauces only are involved, since pain is but seldom experienced; when, however, there is perforation of the palate, or the velum or uvula sloughs away, the greatest inconvenience is experienced in swallowing fluids, which pass into the nasal cavity and are ejected by the nostrils. When the posterior wall of the pharynx is attacked, the ulceration may commit most fearful

ravages, extending upwards into the nares and downwards to the epiglottis. It may be noted, however, that syphilitic ulceration of the larynx, except of the epiglottis, occurs at a much later period than in the pharynx. The history of the case, the post-cervical glandular enlargement, absence of sympathetic induration of parotid, sub-maxillary or anterior cervical glands, the comparative freedom from pain, and above all, its amenity to appropriate remedies, will distinguish this disease from cancer.

PROGNOSIS.—This is always favourable under suitable treatment, although the patient may have been reduced, as often happens, to extreme emaciation. A co-existent scrofulous diathesis is, however, most obnoxious to the success of remedial efforts.

TREATMENT: Local.—Until quite recently the author was in the habit of treating all these tertiary ulcerations by the daily local application of nitrate of silver, acid nitrate, or cyanide of mercury, or sulphate of copper, the first-named being preferred; and such a plan he would still recommend under ordinary circumstances. Latterly, however, he has met with such marked success, both as to rapidity of cure and freedom from recurrence, from the employment of the galvano-cautery, that this measure has largely superseded in his practice the use of the mineral caustics.

Whatever application be made, care must be taken to thoroughly cleanse the part of all coating of secretion over the ulcerations before the local remedy be applied.

Gargles of permanganate of potash, chlorate of potash, and carbolic acid, all aid in keeping the mouth free from accumulation of muco-purulent deposit

(Form. 9, 8, and 2). Ice is also frequently most grateful.

Local treatment must be pursued with the same constancy and persistence as in the secondary form of the disease, and success in these cases depends as much on the perseverance of the patient as on the energy of the medical attendant.

General.—This will consist in the administration of iodide of potassium in 3-grain to 10-grain doses during active ulceration. Some patients are peculiarly susceptible to the action of iodine when combined with potassium. If in such cases the tendency to coryza be not counteracted by the addition of ammonia or of tincture of nux vomica, iodide of sodium should be substituted. The atomic weight of sodium being less than that of potassium, a smaller dose of the former may be administered. Certainly all soda salts are less depressing than those of potash. When the acute attack is past, the prolonged exhibition of perchloride, biniodide, proto-iodide, or bicyanide of mercury, in small doses, is all-important as a tonic, and as a prophylactic against future relapses (Form. 55, 56, 68, and 67).

Pain in deglutition is not usually a prominent symptom in tertiary syphilis as affecting the pharynx. Many patients, therefore, while requiring to take food of a semi-solid character, or, in cases of perforation of the palate, liquids previously thickened, need not, as a rule, be restricted in their dietary, except so far as the general prohibition of condiments and of fluids at high temperature, so frequently insisted upon in these pages, extends.

It must be remembered that in the healing of these pharyngeal ulcerations, cicatrization, with much plastic

exudation, is occasionally followed by contraction and constriction of the pharynx, for the dilatation of which mechanical or surgical measures may be advisable. And on this account it may be noted that no morsel of tissue, seem it to be ever so lightly attached, should be separated by the knife; for it is impossible to say how useful this small atom may be, as a starting-point for healthy action, when the reparative process is once set up. In some instances fragments saved from the destructive ulceration, becoming hypertrophied and separated, appear as distinct new growths (figs. 25 and 26, Plate III.; and fig. 17, Plate II.).

Whenever cicatrization, leading to adhesion of the soft palate to the wall of the pharynx, takes place, nasal respiration is obstructed, the sense of smell is impaired, the patient experiences great difficulty in clearing the nasal passages, and the voice has a most disagreeable tone. In all cases where the ulceration is healed, a more or less distinct and permanent stellate cicatrix is formed (shown in figs. 17 and 25), which often proves of great diagnostic importance in the later history of those cases in which doubt might arise as to the nature of laryngeal mischief. The same may be said of any perforations (fig. 26) that remain unhealed.

CONGENITAL AND HEREDITARY SYPHILITIC ULCERATION OF PHARYNX (Fig. 27, Plate III.).

This affection may make itself evident at a very early period after birth, or may not be manifested until the patient arrives at the period of adult age. The author has witnessed the disease at all periods of life, but has rarely seen a case in which there were symmetrical mucous patches in the pharynx of a congenital syphilitic. The condition of the

pharynx, as witnessed by him, has more frequently, even at quite early periods after birth, been one of true ulceration, though he admits to having witnessed in the same individuals, manifestations in the skin, cornea, &c., which were truly secondary in their character. In the majority of cases of deafness arising from inherited disease, the affection frequently invades the internal ear; but experience would seem to point out that in many cases of even extreme deafness coming on concurrently with pharyngeal ulceration, the aural trouble is confined to the middle ear, since in such a case inhalations, Politzer inflation, and other remedies directed to the tympanic cavity, will cure the deafness when the ulcer is healed. It is important to remember this, since surgeons are too apt to look on all cases of syphilitic deafness as hopeless. Of course, it is quite possible that middle-ear inflammation and cochleitis may co-exist.

TREATMENT.—The local treatment must, as far as circumstances permit, be carried out upon the same lines as recommended in the acquired form of the disease. Remembering, however, how much better children bear mercury than do adults, this drug may with advantage be administered with proportionately greater freedom.

SCROFULOUS ULCERATION OF THE PHARYNX.

Scrofulous pharyngitis is described by Isambert and others as a quite distinct form of disease, but the author has never seen a case in which there were present the symptoms described by those authorities, unless there was a concurrent syphilitic dyscrasia.

While admitting that syphilis, if transmitted, must

produce syphilis, it is quite certain that this disease, when manifested in a subject tainted with scrofula, has certain symptoms superadded. In such a case the local manifestations appear to arise in the glandules, which are hypertrophied and are liable to ulceration. The ulcerations are at the commencement superficial and indolent, but, sooner or later, perforation takes place, and all the characteristics of a true syphilitic ulceration are presented, except that, when remedial measures are applied, it is found that the disease does not respond, as might be expected, to the remedies applicable to either scrofula or syphilis separately. Here the author may be allowed to adopt the words of Sir James Paget,* "I would not venture to call the disease that may occur in a scrofulous person, become syphilitic, a hybrid one, and yet, perhaps, the term is not altogether wrong; but at least I would call it a mixed disease, and hold that syphilis inserted in a scrofulous person will, in its tertiary period, produce signs which it may be very hard to distinguish from scrofula, signs in which the characters of scrofula and of syphilis are mingled, and—which is very important—which require that the treatment of scrofula should be combined with the treatment of syphilis, in order to produce a fully successful result."

TREATMENT.—In accordance with the above opinion, iodide of potassium should be combined with iodide of iron. Good food, fresh air, and phosphorized cod-liver oil are indicated. Sea-air and sea-bathing, and especially the bromo-iodine water of Woodhall Spa, Kreuznach or Challes, both internally, locally, and in baths, will be found very efficacious.

* Discussion on Syphilis. *Pathological Transactions*, vol. xxvii. 1876.

The galvano-cautery is particularly valuable in destroying this form of ulceration.

To prevent misunderstanding, it may just be stated that the author does not deny a specific manifestation of scrofula in the pharynx ; he only affirms that it is not usually one of ulceration. The form in which he has seen it exemplified is that of a low type of inflammatory thickening of the fauces, of the naso-pharyngeal passages, of the nasal septum, of the glands in the vault of the pharynx, and of the faucial tonsils, accompanied not unfrequently by a similar condition of the neighbouring lymphatic glands, which often undergo disintegration. There is also occasional necrosis of turbinate bone.

CANCEROUS ULCERATION OF THE PHARYNX.

This rarely occurs except in a situation visible only by the aid of the laryngeal mirror ; it will be therefore better, in order to avoid repetition, to consider this disease when speaking of laryngeal affections (p. 260).

TUBERCULAR ULCERATION OF THE PHARYNX.

This affection has been described by some authors, and especially by Fränkel of Berlin,* who has given us the latest communication on the subject. Dr. Fränkel's paper contains records of cases which are adduced to support his theory, that "miliary tuberculosis of the pharynx is a disease which attacks either apparently healthy persons or those already affected with phthisis in other organs." A very attentive perusal and careful consideration of the paper, however, has led the author

* *Berliner Klinische Wochenschrift*, November, 1876. Translated in full in *London Medical Record*, January and February, 1877.

to the conclusion that Dr. Fränkel has in no way proved his case, especially with regard to the occurrence of miliary tuberculosis of the pharynx in apparently healthy persons. In none of the cases quoted is any sufficient evidence brought forward to show that the deposit of tubercle in the pharynx preceded its development in other organs of the body, and in most of the cases the diagnosis of tubercle in the pharynx appears to have been made only after evidence of advanced phthisis had been found elsewhere. Dr. Fränkel's paper, therefore, if it proves anything, proves only this, that in cases of tuberculosis, where tubercle is deposited widely over the body, in almost every organ and tissue, the pharynx does not always escape. With regard to the author's own experience in these cases, none in which there was ulceration have come under his notice during the last year or two, since his attention has been specially directed to the matter, but he has long been aware that the whole of the soft palate often partakes of the peculiar anaemic grey coloration of the larynx when the patient is the victim of laryngeal phthisis. In one case also there were observed a few raised prominences about the size of a pea on the tonsil and epiglottis. When pricked, the exuding fluid suggested that they were only small retention-cysts. Dr. Geo has reported four cases—three in the Reports of St. Bartholomew's Hospital (vols. vii. and xi.), and one in the *Medical Times and Gazette* (October 13, 1877). Their history, however, is exactly similar to that of the cases of Dr. Fränkel, and they have only tended to strengthen the author's view of Dr. Fränkel's paper.

There is a form of acute general tuberculosis associated with syphilis in which a peculiar worm-eaten

appearance of the pharynx is not uncommon; the author, however, is not disposed to consider this as a separate disease, requiring an elaborate description and directions for treatment, inasmuch as it is merely a late manifestation of a general and fatal malady.

ABSCESS OF THE PHARYNX.

General diffuse suppuration of the pharynx is fortunately a very rare termination of acute inflammatory attacks in this region. When it does occur, it is usually in that form of sore throat arising from the poison of a fever or of a tainted atmosphere, which has been already described under the heading of phlegmonous pharyngitis.

Circumscribed abscess is almost always associated with caries of one or more cervical vertebræ (retropharyngeal), or of the cartilages of the larynx, in which latter case the abscess may burst into the air-passages. The abscess is not really one of the pharynx, but of the tissues either between it and the vertebræ behind, or of the connective tissue between the pharynx and larynx.

The local symptoms are mainly those of obstruction to the passage of food, possibly of dyspnoea with cough, and are accompanied by extreme general exhaustion. A very characteristic symptom, when there is vertebral disease, is the pain occasioned by movement of the head on the spinal column, causing the patient to keep the head quite stiff. In children convulsions and spasms are not unfrequently witnessed.

With the laryngoscope a large doughy swelling may often be observed, and palpation will frequently determine the presence of pus. The prognosis is very grave

where there is spinal caries, but cases have not been wanting of a favourable termination.

TREATMENT. — Some surgeons recommend great caution in the evacuation of pus in these cases ; but the author has seen no untoward result from a free opening with the pharyngeal lancet. Artificial feeding by an œsophageal tube may be required for a lengthened period, especially in those cases in which there is fistulous communication with the larynx.

NEUROSES OF THE PHARYNX AND FAUCES.

Nervous affections of the palate and pharynx, as in other regions, are divided into impairment of the sensory and of the motor functions.

ANÆSTHESIA of the pharynx is said to occur in typhus and cholera, and is also common in general paralysis of the insane. From an investigation into the condition of the throat in fifty patients suffering from the last-named disease, made by the author,* at the invitation of Dr. Crichton Browne, it appears that the reflex excitability of the pharynx is markedly diminished from the beginning of the disease. Anæsthesia of the pharynx may also be present along with paralysis after diphtheria, in syphilitic and other ulcerations, or as the result of paralysis of the glosso-pharyngeal or pneumogastric nerve.

HYPERTHESIA can hardly be said to exist as a disease, but the presence of an elongated uvula may produce great irritability of the part. In chronic pharyngitis there is, as long as congestion remains, a decided increase of sensitiveness, due to reflex irritation.

* *West Riding Lunatic Asylum Medical Reports*, 1875, vol. v. p. 271.

NEURALGIA may occur, due to the same causes as those which produce similar disorders in other regions, and must be treated on general rather than on purely local indications.—(See Neuralgia of the Larynx, p. 274.)

SPASM OF THE PHARYNX may be due to incomplete mastication, arising from absence of teeth, or the imperfect bite of an artificial set. It is to be distinguished from organic disease by the fact that the patient has difficulty, never actually amounting to inability of deglutition, quite irrespective of the consistence or temperature of the food. The œsophageal bougie or digital examination will complete the diagnosis. Spasm is also a symptom of chronic pharyngitis, and lastly, and above all, it occurs in that form known as *globus hystericus*. In this last case there will *invariably* be found congestion, with or without enlargement of the thyroid gland. In many instances in which the gland is but slightly enlarged, the peculiar thrill due to venous congestion will be felt in the thyroid region.

Female patients are much more liable than males to these nervous affections, and will in such case generally be found to suffer either from menorrhagia or amenorrhœa.

TREATMENT.—This must be directed especially to the removal of the cause. When the teeth are at fault, it is most important to call in the aid of the dentist, since, in the author's experience, many cases of malignant ulceration have commenced with symptoms, and have been ascribed to causes, purely functional. Faradization, by means of the œsophageal electrode (simply an elongation of the laryngeal instrument), is of service in restoring healthy muscular action.

PARALYSIS OF THE PHARYNX.—This may be due to injury or disease of the brain and pneumogastric, or it may occur as a sequel of many wasting diseases, and especially after diphtheria.

TREATMENT in the latter class of cases must consist in the exhibition of general tonic remedies, the application of local faradization, and the administration of thoroughly soft, and, if necessary, artificially masticated, food. The prognosis is favourable.

MALFORMATIONS, DEFORMITIES, AND MORBID GROWTHS OF THE PHARYNX.

Dilatation of the pharynx,—Pharyngoecele—leading to the formation of a pouch in which the food is apt to lodge, is occasionally witnessed, or the passage may be more or less constricted as the result of syphilitic cicatrization. The canal may also be narrowed temporarily by an abscess. Both these two last-named conditions have been already considered. The author has found but very scant mention of another cause leading to narrowing of the lower pharynx, namely angular curvature of the cervical portion of the spinal column. Such a case recently occurred in his practice, and, as it offers many points of diagnostic interest, may be briefly related.

The patient, a gentleman, aged 50, came under observation October 23rd, 1877. He complained of continual snuffling and accumulation of phlegm, of foetid taste and odour, dropping into the throat from the post-nasal passages. Deglutition was difficult, except with soft food and fluids. Respiration was very short; the voice became feeble, and was occasionally lost, "as if there were no breath," but

on the occasion of this visit was thick and toneless, and there was evidently an obstruction to free nasal respiration. The special senses of hearing, smell, and taste were unaffected. Examination of the anterior nostrils failed to reveal, as was suspected, any evidence of a nasal polypus. On attempting rhinoscopy and laryngoscopy, a large tumour was seen to project from the posterior pharyngeal wall. On digital examination, it was felt to be hard and circumscribed. It was as large, and extended about as far forward, as half a moderate-sized orange.

On externally examining the back of the head, it was at once seen that there was an angular curvature forwards of the cervical portion of the spine, the vertebræ implicated being the 2nd, 3rd, 4th, and 5th. The spine of the 6th could be distinctly felt. The patient explained that he had always had this curvature, but had suffered no inconvenience until after an attack of Indian fever some years previously, since which it had seemed to increase. Immediate temporary relief was given on elevation of the head, by placing one hand under the chin and the other under the occiput. Consultation was held with Mr. William Adams, who advised a support which should diminish the pressure; this instrument was accordingly adjusted, and already has had good result. The explanation of the symptoms in this case is, without doubt, decrease of intervertebral substance, and possible absorption of the compressed vertebræ, caused partly by debility after the Indian fever and partly by an excess of the natural tendency of the head to sink with advancing years. It is interesting to note further that the general health of this patient is exceedingly good,

and that he is constantly and actively occupied from philanthropic motives, in life-boat work on the southern coast.

New formations in the lower pharynx are rare, though fibromata, chondromata, and osseous tumours are all occasionally met with, and polypi are sometimes seen to descend from the naso-pharynx. Cohen (*loc. cit.*) reports that he has met with one case of ordinary papilloma growing from the mucous membrane in the posterior wall of the pharynx. Malignant growths are also infrequent in this region. When occurring, they are generally of the encephaloid variety. Syphilitic outgrowths from the posterior wall, or from the pharyngeal boundary of the larynx, are by no means uncommon.

The symptoms are those affecting respiration, and especially deglutition.

Treatment is mainly of an operative character; where the tumours cannot be removed, artificial feeding by a long œsophageal tube may be necessary.

CHAPTER VII.

DISEASES OF THE UVULA AND TONSILS.

AFFECTIONS OF THE UVULA.

WHEN inflammation or ulceration attacks the upper part of the pharynx and fauces, the uvula is almost always involved. It commonly becomes relaxed as a sequel of one or more previous attacks of sore throat, or such a condition may be, and often is, the first symptom of discomfort in this situation, and appears as the result of a low state of the general system, and without any history of acute angina. In such a case the relaxed uvula acts as the excitant, or, at any rate, as an aggravator, of a long train of most inconvenient, not to say serious, symptoms, and serves to make the throat peculiarly liable to catarrhal attacks.

That this is so may be proved by the fact that all efforts to relieve the chronic pharyngitis will often prove unavailing so long as the elongated uvula is allowed to remain intact, while, on the other hand, the simple removal of the relaxed tissue will as frequently prove efficacious without the employment of any other remedial measure. No further justification is therefore necessary for considering diseases of the uvula under a separate heading.

ACUTE INFLAMMATION OF THE UVULA—ŒDEMA OF THE UVULA (Fig. 28, Plate IV., and Fig. 36, Plate V.).

This is rarely seen except as associated with general pharyngitis; but now and again cases come under observation in which the uvula suddenly becomes red, swollen, and infiltrated, with comparatively little hyperæmia of the neighbouring parts.

This acute inflammation of the uvula partakes of the nature of tonsillitis, and occurs in people of an arthritic diathesis; the bowels are constipated, and the digestive system deranged. œdema of the uvula is also not uncommonly seen in tertiary syphilis, in phthisis, and in cases of general hydræmia.

The symptoms complained of are those of obstruction to the respiration, a sense of discomfort in taking food, and a frequent desire to swallow saliva, with but little acute pain.

Cough, when present, is of an irritating, tickling character, and is induced in those cases in which the uvula touches the epiglottis; it is, however, often absent in acute œdema when the enlargement is more that of bulk than of length.

TREATMENT.—Removal of the uvula is not advisable during acute inflammation, and it is preferable to make a few punctures and scarifications, followed by the use of astringent remedies. In syphilitic œdema the uvula should on no account be ablated.

SUBACUTE AND CHRONIC INFLAMMATION OF THE UVULA.
(Fig. 13, Plate II.)

This is seldom seen unassociated with a certain amount of chronic pharyngitis, which is, however,

often limited to the anterior pillars of the fauces. Chronic inflammation leads to the next affection,

ELONGATED UVULA (Figs. 13 and 14, Plate II.;
Figs. 29 and 32, Plate IV.).

This condition is met with in all classes of patients suffering from chronic angina, but especially in those who have been obliged to use the voice during catarrhal attacks; just, in fact, in those who have been described as most subject to chronic pharyngitis (p. 97). Very few people suffering from this disease have not a relaxed uvula; but the latter condition may often give rise to symptoms and demand treatment quite irrespective of the pharynx.

SYMPTOMS: A. FUNCTIONAL.—These vary greatly in different cases, and often require the nicest judgment for their discrimination.

Thus, while one patient with an apparently very pendulous uvula will not complain of any inconvenience, another with apparently but slight local cause will exhibit well-marked symptoms. The usual sensation is that of a desire to frequently clear the throat of a source of irritation; this desire being only experienced at particular periods, — as, for instance, on rising in the morning, on coming into a warm out of a cold atmosphere, and also when the general system is fatigued or disturbed. In more severe cases there will, under similar circumstances, be hacking, irritable cough, with expectoration of small muco-gelatinous pellets, paroxysmal and spasmodic attacks, retching and vomiting. The author has seen several cases in which the last-named symptom occurred on

the patient taking the ordinary morning cold bath, and in one instance the breakfast had been daily rejected for many weeks. In another case gargling after cleansing of the teeth was always followed by violent spasm, with bloody expectoration, clearly traced to come from the pharynx.

When the uvula is very relaxed, the greatest discomfort is felt as the patient lies down at night; and many cases occur of spasm of the glottis, awaking patients from sleep, due to reflex irritation from this cause.

It is but natural that symptoms such as those described condnce to bring the patient to a state of great nervous prostration; the want of sleep, the cough, and the retching will produce great weakness and emaciation, and the patient will appear to be suffering from phthisis or grave organic disease; especially will this be suspected in those occasional cases in which there is an account given of fixed pain at some point in the chest, which, on examination, is found to be only another effect of reflex irritation. The author some years since had under his care a medical practitioner who complained of constant pain in the left subscapular region, with irritable cough, emaciation, and loss of general health; on the recommendation of two physicians, eminent in chest diseases, he sold his practice, but he entirely recovered his health after the removal of his uvula.

Gastric derangements will be aggravated by the presence of an elongated uvula, while, on the other hand, the symptoms caused by the latter will be increased by anything likely to induce or increase the former condition.

B. PHYSICAL.—These are not easily mistaken, if the surgeon will bear in mind the three following suggestions when he makes an examination of a relaxed throat :—

1. Direct the patient to open the mouth without taking a breath, and the relaxed uvula, which on inspiration would be retracted and appear normal, will then be seen to be lying on the tongue.

2. Remember that the amount of relaxation depends on the relation which the length of the uvula bears to the arch of the palate.

3. In those cases in which, observing both these cautions, the uvula does not appear to be relaxed, and yet there is no other reasonable cause for the symptoms, observe carefully the edges of the curtain of the soft palate, and they will be seen to be thinned, white, and quite translucent, and to almost flap about with respiratory action (fig. 14, Plate II.).

This last condition will be found in ordinary cases when the uvula is in a state of relaxation, so that it is quite possible to mark the boundary of membranous relaxation (fig. 29, Plate IV.). Often there is hypertrophy of closed follicles in the tissue of the uvula, giving the appearance of little tubercles, or fatty deposits or cysts. They are of no real importance.

The larynx is generally slightly congested in these cases; this is due to the constant irritation of the cough, and mucus may often be seen lying in the inter-arytenoid fold.

TREATMENT.—The cause having been ascertained, it must be removed, at the same time that steps are taken to brace up the relaxed mucous membrane. Astringent applications and lozenges may be employed

(Form. 11, 14, 45, and 47). These failing, there can be no reason why the simple operation of ablation of the relaxed portion should not be performed; on general grounds, however, astringents should always be first used, since it is advisable to see how much

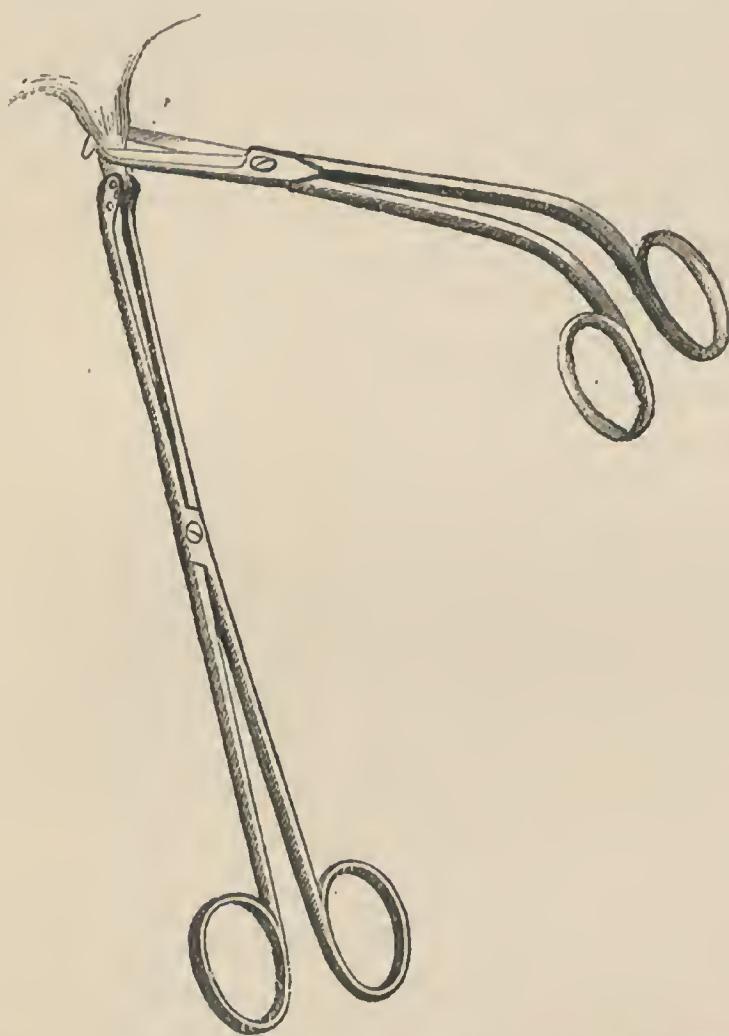


Fig. JJ.—UVULA FORCEPS AND UVULA SCISSORS, in position for operating.

of the relaxation is temporary and how much permanent.

In operating, the uvula should always be well drawn out with the long forceps and removed just above the point of junction of the mucous membrane with the tissue

of the uvula (Fig. JJ). Instruments on the guillotine principle, called uvulatomes, are not suitable for the purpose of ablation of the uvula. The tendency to retraction of the velum when touched renders it very uncertain how much will be removed. The parts are always bruised and crushed, but as there is no point of resistance to the instrument, the tissue is often only partially separated. An American physician recently informed the author that "he was bound to say that he had never used an uvulatome without being obliged to finish the operation with scissors," and such, it is believed, will be the general experience of all who employ this instrument. Nor is it advisable to make for many days previously to removal, lines around the uvula with caustic pastes. No real death of the part takes place, but there is a considerable increase of inflammation around, so that when division is made, both the operation and the healing process are more painful and recovery more tedious.

While it is better to remove too much than too little, cases have certainly occurred in which too complete removal has been followed by long persistent pain and some difficulty in swallowing. Inasmuch as there already exists an unreasonable amount of prejudice against surgical measures in these cases, it is a pity that anything should be done to bring disrepute upon so valuable an operation, of which it has been truly said that "while hardly any slight affection of the throat produces such serious symptoms as elongation of the uvula, it is equally true that there is no slight operation that gives such complete and permanent relief as removal of the elongated extremity" (Aitken).

If the patient be directed, after the operation, to sit perfectly still without washing the mouth, haemorrhage but seldom occurs ; should it happen, the sipping of a few drachms of a saturated solution of tannin (Form. 4) will speedily check it. The pain of the operation itself is but slight, but the amount of after-pain is very variable ; more or less discomfort in swallowing is experienced for from twenty-four hours to a week, and all food should therefore be soft and tepid. Care must be taken to avoid catching cold ; the patient should stay within doors for a day or two, and the voice should be completely rested. One other caution is necessary with reference to the after-treatment of these cases ; viz., that, as in all cases of reflex irritation some time may elapse before the symptom disappears after the cause has been removed.

MALFORMATIONS AND NEW GROWTHS.

The uvula may be asymmetrically truncated, bifurcated, or even absent, as the result of an arrested development.

Warty growths, not necessarily dependent on any syphilitic history, though generally found in patients having that dyscrasia, are not unfrequently found growing from some portion of the surface of the uvula. Angiomatous (vascular) growths have also been reported as arising from this situation.

They do not as a rule give rise to much inconvenience, but in three cases under the author's observation they have been attached by a very long pedicle and have produced violent irritation of the larynx and spasmodic cough.

In one such case which (fig. 30, Plate IV.) the

author brought before the Medical Society of London, so far down did the growth hang, that it was not seen until a laryngeal mirror, introduced to examine the glottis, pushed it up into view.

In this case removal was followed by immediate relief of distressing, and even urgent respiratory symptoms, with constant spasmodic cough; and such is the treatment to be generally recommended.

AFFECTIONS OF THE TONSILS.

The tonsils are liable to varying degrees of inflammation, hypertrophy, and atrophy, as well as to new formations, both benign and malignant.

ACUTE TONSILLITIS, AMYGDALITIS, ANGINA TONSILLARIS, ACUTE INFLAMMATION OF THE TONSILS, QUINSY (Fig. 31, Plate IV., and Fig. 36, Plate V.).

The mucous covering of the tonsils may partake of any of the general inflammations attacking the pharynx and fauces, but, as usually understood, the term "quinsy" implies acute inflammation limited to, or at least originating in, the glands themselves. Several distinctions have been made in this affection, but to the author they appear only as differences in amount and in degree, involving no true pathological variety; thus only the mucous surface and the orifices of the follicles may be inflamed (*superficial tonsillar angina*), or only a few crypts may be attacked by inflammation and their secretion arrested without involving the parenchyma (*follicular catarrh of the tonsils*), or one gland only may be inflamed while the other escapes, or the whole gland structure of both tonsils may be involved (*parenchymatous tonsillitis*).

This stage, when proceeding to suppuration, is in turn termed *tonsillar abscess*. So-called *peritonsillitis*, in which the inflammation is of the connective tissue, often occurs as a result of a low state of health, which may be the exciting cause. There is, however, frequently superadded the special diathesis, to be considered below as almost invariably present in the subjects of the follicular or parenchymatous form. Lastly, the disease may extend to the pillars of the fauces and the soft palate.

The inflammation may subside without proceeding to suppuration ; it may be superficial and limited, or deep and general. In describing this disease, therefore, it will be at once apparent that all the symptoms and signs may not be present in every case in actual practice, or, if present, many of them may be considerably modified.

ETIOLOGY.—Amongst the most common predisposing causes assigned by various writers has been a strumous constitution, rendering the patient liable to inflammatory attacks similar to those so frequently seen in the lymphatic glands. This view has, however, always required the qualifying admission that in tonsillitis exposure to cold is an exciting cause, whereas catarrh plays no important part in the production of ordinary strumous glandular affections.

From most careful examinations, extending over a number of years, the author has come to the conclusion that the darthous or arthritic diathesis invariably exists in those patients subject to acute tonsillitis. There need not necessarily be, though there very often is, corroborative evidence, either in the family or personal history of the patient ; but it is certain

that attacks of quinsy are most prevalent at those periods of the year and under those atmospheric conditions which are most favourable to rheumatic exacerbations, viz., in early spring and the later months of autumn, when cold damp weather with south-east winds is prevalent.

Indeed, so close is the relationship between tonsillitis and rheumatism, that in order to complete the picture of the etiology of the former affection one cannot do better than quote almost verbatim the concise account of the predisposing and exciting causes of acute rheumatism given by Dr. F. T. Roberts,* merely changing the name of the disease:—

Predisposing Causes.—Tonsillitis is distinctly an hereditary disease and it tends to run in families. It chiefly attacks persons from fifteen to thirty-five years old, being especially frequent from sixteen to twenty, but no age is exempt." It is rare to see true follicular tonsillitis, either acute or chronic, in young children, though I recently saw a typical case of quinsy in a young girl only ten years of age (fig. 31, Plate IV.). "Previous attacks decidedly increase the predisposition to the disease. More cases are met with among males, and in the lower classes, on account of their greater exposure to the exciting causes. Climate and season have a considerable influence, the affection occurring mainly in temperate but very moist climates, and where there are sudden changes of temperature. It is far less common in tropical and very cold countries. The same conditions influence the prevalence

* "Handbook of Theory and Practice of Medicine," 3rd edition, vol. i. p. 228.

of the complaint at different seasons. A state of ill-health from any cause is said to predispose to tonsillitis, and also mental depression or anxiety; but many individuals are attacked when in apparently perfect health."

"**Exciting Causes.**—The ordinary exciting cause is a sudden chill, induced by exposure to cold and wet; sitting in a draught when heated or perspiring; neglecting to change wet clothes, or in other ways. In not a few instances no definite cause can be fixed upon; and it is quite conceivable that processes may be gradually carried on in the system which tend to generate an amount of poison sufficient to set up the complaint. Errors in diet, suppression of menses, and various other disturbances, have been ranked as causes. Scarlatina seems to lead to tonsillitis sometimes, probably by interfering with the excretory function of the skin (and gland)."

SYMPTOMS : A. FUNCTIONAL.—**Voice** : Phonetic quality of voice is not affected, except inasmuch as general prostration may diminish its power.

Articulation and enunciation greatly impeded, and quite characteristic in its obvious pain and complete unintelligibility; the former being affected by the inflammatory swelling of the gland, and the latter by the impaired mobility of the jaw.

Respiration.—The free passage of air to the lungs is impeded, and nasal breathing is almost entirely obstructed; the patient snoring loudly even when awake.

Cough.—None; but a frequent desire to clear the mouth and back of the pharynx of the peculiar and abundant viscid mucous secretion.

Deglutition.—Greatly distressed from narrowing of the faucial orifice and muscular spasm, and accompanied by pain of a lancinating character, extending to the temporo-maxillary articulation. It is this pain which prevents the patient opening the mouth, and also causes even the swallowing of saliva to be distressing. There is often complete inability to swallow any food, even of the softest consistence, blandest character, and mildest temperature; and attempts to swallow fluid frequently result in its ejection by the nostrils, some of it also oozing with saliva and mucus from the angles of the mouth.

Hearing.—Often temporarily impaired, with not infrequent pain, due to extension of the inflammation to the middle ear, as well as to irritation of the chorda tympani. Many cases are accompanied by tinnitus.

Senses of Smell and Taste.—Both greatly affected; the latter being much impaired by the constant presence of foul secretion in the mouth.

Pain in connection with the functions has been already alluded to; but it is a constant, ever-present symptom of the disease, and the one element which appears more than another to produce the very characteristic prostration. At the commencement of an attack there is a simple feeling of dryness and heat; but as the affection advances the swelling of the parts and of the surrounding glands, the cramp of the muscles, with ineffectual attempts to perform functional acts, and to be rid of oppressive obstruction, all tend to produce a sense of well-nigh intolerable suffocation.

Pain is complained of, not only in the throat and,

as before mentioned, in the ears, but in the temporo-maxillary articulation, and in rotation of the head, which is often held quite stiff, as in retro-pharyngeal abscess. Headache is also a constant and wearying symptom. Painful sensations are always increased on awakening from sleep.

B. PHYSICAL.—The practised observer will, if the disease be at all advanced, have probably arrived at a correct diagnosis on hearing and seeing the patient's attempts to describe his symptoms; but any doubt will be at once resolved when he endeavours to examine the throat, the difficulty of opening the mouth being almost pathognomonic. Should he succeed in gaining a view of the fauces, he will see behind an overloaded foul tongue, a more or less uniformly red and swollen mucous membrane. The affected tonsil or tonsils (most frequently only one is attacked at first; or one is in a much more advanced stage of inflammation than the other) will be seen heightened in colour, and enlarged in size, causing great narrowing, or complete closure, of the faucial orifice. Sometimes mucous crypts will be observed blocked by arrested follicular excretion, or covered by a foul, creamy exudation. The uvula, which may partake of the inflammation, and be oedematous, will more often be seen relaxed, and lying adherent, as it were, to one or other tonsil. The pillars of the fauces are not always inflamed, but the anterior ones are more often involved than the posterior. The inflammation rarely extends to the pharynx, and still more seldom to the buccal cavity, or mouth. In patients predisposed to quinsy, and whose tonsils have been removed, subsequent recurrence often attacks the fauces. It

is, however, very rarely that the process in such a case goes the whole length of suppuration.

When visual inspection is impossible, it may be desirable to examine with the finger, so as to ascertain whether suppuration has taken place; but, in the author's opinion, such a procedure only gives needless pain.

C. MISCELLANEOUS.—In these, as in the causes, there will be noticed a great analogy to rheumatism. The general system is greatly disturbed, the patient being really ill. Frequently the disease commences quite suddenly, but more often there is a warning of a day or two. In hospital practice patients seldom apply until they have been ill three or four days, "thinking the attack would pass off."

At the commencement the ordinary febrile symptoms of inflammation are present, viz., heat of skin, nausea, thirst, &c., with nocturnal exacerbation; but this stage is soon succeeded by profuse cold, sour perspiration, with pallor of surface, anxious expression of countenance, and mental depression, greatly increased by want of sleep, and occasionally resulting in delirious wandering.

Obstinate constipation invariably precedes and accompanies the disease; the urine is high-coloured, and loaded with lithates, and occasionally there is a deposit of albumen. The tongue is coated, the breath foul; appetite is lost, but thirst is constant. The temperature is greatly increased, and the pulse is accelerated.

Externally there is seldom sufficient glandular enlargement to account for the pains and stiffness in the lower jaw, but there is sometimes, in severe cases,

painful puffiness of the tissues of the face and neck. Very frequently there are associated rheumatic articular and muscular pains in the limbs, and in many cases in which the disease does not reach suppuration, resolution of the local trouble is followed by a smart attack of rheumatism, or rheumatic gout.

DIFFERENTIAL DIAGNOSIS.—The diseases that may be confounded with tonsillitis are diphtheria, phlegmonous pharyngitis, scarlatina—where the rash is ill-developed,—syphilis, cancer, post-diphtheritic and labio-glosso-laryngeal paralysis.

From *diphtheria* it may be differentiated by variation in many of the subjective and general symptoms, into which it is needless here to enter. Especial points of distinction are the ease with which the fauces can be examined in diphtheria, and the fact that the secretion in tonsillitis is limited to the tonsils themselves, is non-adherent, and does not lay bare a bleeding or ulcerated surface when removed: whereas, it is most rare, when diphtheria attacks the pharynx, not to see patches which are firmly adherent on the uvula and soft palate. Cases now and again occur in which diphtheria follows on an attack of tonsillitis.

Phlegmonous Pharyngitis is often treated as tonsillitis, but may be differentiated by the history, by the marked asthenia, and locally, by the fact that the submucous tissue is affected rather than the parenchyma of the tonsil.

In *scarlatinal sore throat* the local differences are not so well marked; but the hot, dry skin, high degree of pyrexia, flushed face, and characteristic enlargement of the papillæ of the tongue, even without the appearance of the rash, will assist in marking the distinction.

It must not be forgotten that in some rare cases of tonsillitis there is a slight skin eruption.

Syphilis.—On first consideration, it would hardly appear that there was much likelihood of a mistake being made between this disease and acute inflammation of the tonsil; but the possibility of error would not be suggested, had not the author himself witnessed examples of it both in the early secondary and in the acute tertiary forms.

The tonsils are often inflamed as part of the process of secondary manifestations; but a careful comparison of the symptoms, as described in these pages, especially with reference to the particular characteristic of secondary syphilis,—symmetry; and of the tertiary form,—destructive ulceration, will enable the practitioner to avoid so serious a mistake.

Cancer.—In the distressing and rare affection of primary cancer of the tonsil there is infiltration and enlargement of the gland and of the surrounding lymphatics, with foetor of breath, foulness of tongue, and difficulty of swallowing, which might well lead to an error of diagnosis. Here, again, a correct opinion will most often be arrived at by care in noting the history and general symptoms. Especially will it be remarked that the graver disease proceeds with slow and gradual steps, and has probably existed for many weeks before advice has been sought.

In both *post-diphtheritic* and *labio-glosso-laryngeal paralysis* the difficulty in opening the mouth, the thickness of speech, similar to that noticed in quinsy, the dysphagia, ejection of fluids by the nostril, and excess of salivary and mucous secretion, might all, at first sight, lead to an erroneous diagnosis. Inquiry into

the previous history, the duration of symptoms, and physical examination will clear up doubts.

DURATION AND PROGNOSIS.—An attack of tonsillitis seldom lasts more than a week; but there is a great tendency to relapse, especially if the patient has been subjected to unfavourable sanitary influences. One tonsil having been affected, and the attack having terminated by resolution, the opposite gland may, a few days later, become inflamed, and proceed the whole length of suppuration. Thus the illness may extend to two, or even three weeks. Gangrene never occurs in the form of tonsillitis here described. The prognosis, as to recovery, is almost invariably favourable, and convalescence is wonderfully rapid.

The patient must be warned that a first attack is but too often the forerunner of others, which will recur with almost periodical regularity.

Cases of death from quinsy have been reported, but, in all probability, they have been due to association with more serious disease, especially with exanthematous affections, in which the eruption has not been developed. Very rarely, as in young children, death might occur from inanition; but, as already pointed out, the disease is not frequent much before puberty. Extension of the inflammation into the larynx is a rare complication.

TREATMENT: General.—First and all-important is a thorough clearance of the *præmœ* *vie*, with the continuance of moderate purgation throughout the whole course of the attack. Resolution is greatly favoured by the early and frequent administration of one-drop doses of aconite (Form. 52).

Guaiacum given in mixture, as first advised by Sir

Thomas Watson, or in the form of lozenges, appears to act both locally and constitutionally, and its almost specific effect tends to strengthen the rheumatic analogy (Form. 15). On this same ground the renal secretion should be kept alkaline by the potash salts; and salicylic acid, which the author has lately tried with fair results, is in some cases indicated (Form. 57, 60, and 62).

Where there is any depressing influence, iron may be added; on recovery, simple vegetable bitters with alkalies are much more serviceable than the stronger, but less easily assimilated, tonics (Form. 61).

Local.—Contrary to recognized traditions, the use neither of steam nor of spray inhalations is recommended, as the fatigue they cause the patient far outweighs any benefit to be derived from them.

Ice, again, although occasionally grateful, much more often aggravates pain and cramp. By far the most effective and agreeable of all local measures is the frequent holding in the mouth, with mild attempts at gargling, of warm water medicated with glycerine of carbolic acid (1 to 40 or 60), or salicylic acid (1 to 100). Lemonade made from the fresh fruit and with little sugar, taken through straws, is very refreshing and is often successful in "cutting the phlegm." Guaiacum lozenges are serviceable in the early stages in producing resolution, but are only wearisome and useless when symptoms of suppuration are manifested.

Externally, severe counter-irritation, leeching, and other depletive measures, are to be condemned. External application of a stimulating liniment of ammonia, of the compound mustard liniment, or of the iodine liniment (B.P.), are, if employed early, often

of service in assisting resolution of the local inflammation. Linseed poultices, the earlier ones containing a small proportion of mustard, wet compresses of linen or Iceland moss, are decidedly comforting, if not of great utility, though many patients prefer a simple warm silk wrapper.

The question of the time for surgical interference is one on which considerable difference of opinion exists; the following is the practice pursued and recommended by the author:—

1. Never to inflict unnecessary pain by useless scarifications on the surface of a tonsil undergoing general inflammation.

2. Never to make deep incisions unless there is almost certainty of advanced suppuration. The instrument for making an incision should be a curved pointed bistoury with not more than one inch of cutting edge, and the cut should be made from without inwards, so as to avoid the not impossible risk of injuring the artery.

3. To remove the tonsils as soon as they become sufficiently enlarged in those cases of recurrent quinsy in which there is not chronic enlargement, but in which the tonsil, though diseased, is too small for excision, except on occurrence of the acute inflammation. By this means the disease is at once cut short and the chance of further recurrence avoided.

4. To recommend removal, on subsidence of the attack, of tonsils chronically enlarged and liable to quinsy.

Prophylactic.—The hints already given of the liability to recurrence, and of the predisposing causes, will

sufficiently indicate the necessity of cautioning the patient in matters of diet, climate, and hygiene.

Sea air and continental baths certainly help to diminish the tendency to development of the diathesis.

Seeing that constipation invariably precedes an attack of quinsy, it behoves the patient to pay particular attention to the regular daily action of the bowels. There is nothing better for this purpose than the natural saline aperient waters—Karlsbad, Friederichshalle, Hunyadi Janos, Pullna, &c.

CHRONIC INFLAMMATION OF THE TONSILS (Fig. 33, Plate IV.).—ENLARGED TONSILS (Fig. 32, Plate IV.).

The first-named condition may result as the remains of an acute inflammation, or it may be due to a chronic disease of the follicular secretion of the gland, tending to inflammation, dilatation, and obstruction of the crypts, with hypertrophy of the parenchyma. Chronic follicular disease of the gland does not, as has been already pointed out, necessarily imply enlargement, and this occasional absence of hypertrophy is the reason why such cases are so obstinate of cure. More usually enlarged tonsils are caused by an indolent catarrhal inflammation, occurring principally in scrofulous children, leading to enlargement and more or less induration; or it may be due to a true hypertrophy, with but very little, if any, inflammatory deposit, much as the lymphatic glands may become enlarged without going the length of inflammation and disintegration.

SYMPTOMS : A. FUNCTIONAL.—The subjective signs of enlarged tonsils need hardly be elaborately described, since the physical evidences are so easy of detection.

Voice will be husky, toneless, and easily fatigued; when there is hypertrophy, it will be thick, guttural, or nasal, and will generally be high-pitched.

Articulation will also be interfered with, the patient speaking as with a full mouth, having great difficulty in pronouncing palatal consonants.

Respiration can never be carried on healthily where the tonsils are diseased, since all inspired air passes over an unhealthy surface. Where enlargement is considerable, the lungs are never fully aerated, the chest-walls become narrowed and the breast-bone prominent; the patient is torpid and lethargic, and is very liable to attacks of pneumonic congestion.

Nasal respiration is greatly impeded, causing the patient to snore loudly in sleep, and to breathe audibly when awake, with mouth wide open, which gives a characteristic stupid expression to the face. Attention has been drawn by some writers to the flattening of the nasal bones, due to insufficient dilatation of the naso-pharyngeal space, and the appearance is considered by them distinctive: this condition is, however, often observed in other diseases which cause obstruction in the nasal passages.

Cough is not a common symptom, but the author has seen a few instances of severe spasmoid cough due to reflex irritation from enlarged tonsils. One very remarkable case came under his notice in December, 1876. It was that of a little boy, aged 10, who had suffered from constant "hemming" of the throat for about twelve months, and from persistent dry barking cough without expectoration, very similar to that known as hysterical, for the last six weeks. So persistent was this cough that it would recur in the

intervals of eating at meal-times, and the moment he awoke at night. The little patient had been under the care of two able family practitioners and had been treated for stomach-cough, tooth-cough, thread-worms, and every other conceivable cause for the irritation, all without the slightest benefit; the boy was becoming exhausted, was losing appetite and flesh from want of sleep and the ever-present distressing cough. On looking into his mouth, the tonsils were seen to be very much hypertrophied; and failing on examination to find any other abnormal condition, they were, with the consent of the father, then and there removed. From that moment the child lost his cough, and it has not since returned.

Deglutition is seldom painful but generally uncomfortable, especially on the slightest recurrence of inflammation. There is unusual sensitiveness to food at high temperature and of piquant character. Another characteristic of enlarged tonsils is that there is a desire to take fluid very frequently during eating, so as to assist the passage of solid food.

The senses of hearing, of smell, and of taste are all more or less impaired. One very common cause of deafness is obstruction of the Eustachian tube, due to enlarged tonsils. It is not always nor often that the enlarged tonsils themselves obstruct the Eustachian orifice, but there is usually, with such a condition, the association of disordered secretion with chronic hypertrophic inflammation of the naso-pharynx, and a strong tendency for the catarrhal inflammation to extend to the middle ears. In these cases also there is not unfrequently a disposition for the cerumen to be impacted.

Pain is rarely an element of chronic tonsillar disease or of enlargement.

B. PHYSICAL.—On looking into the throat, the cause of all the foregoing symptoms is at once apparent. One or both tonsils are seen to be more or less enlarged and inflamed, and in a corresponding degree to obstruct the faucial opening. They are often studded with several open crypts, some of them filled with white or yellowish-white matter: when pressure is made, this matter is seen to exude in cheesy-looking masses of very offensive odour.

C. MISCELLANEOUS. — The general health, as has been indicated, may greatly suffer from such a cause; every function of circulation, respiration, and digestion being performed in a sluggish manner, and nutrition consequently becoming impaired. There is usually the history of one or both parents, and of other members of the family, suffering from a similar condition, and the diathesis is either rheumatic or strumous.

TREATMENT of chronic follicular disease is very difficult where the tonsils are not hypertrophied. It has been proposed to squeeze out the cheesy secretion from each diseased crypt and then to apply solid nitrate of silver or other caustics to the cavity of each follicle. No such measure is, however, of much use, as it is only tentative and of no permanent benefit. It is far preferable to treat the case on general principles, according to the diathesis, and to give guaiacum or chlorate of potash lozenges. Whenever (as is almost certain to occur in these cases) active inflammation causing enlargement takes place, it is to be rather encouraged and the gland then removed. The

author has frequently pursued this plan with the most satisfactory results.

Chronic enlargement of the tonsils is only to be treated satisfactorily by the one method of excision, and there does not appear any valid reason why there should be two opinions on the question. The operation is simple, it is accompanied with little pain; the result is speedily and almost always permanent benefit. All measures of local applications, "removal without cutting" by caustic pastes, injections into the substance of the gland, are useless, and some of them



Fig. KK.—TONSIL GUILLOTINE, in position for operating on the left tonsil.

barbarous.* Excision is best performed with a guillotine (Fig. KK), the patient's head being held by an assistant, who, standing behind, at the same time presses in the gland from without, on the side on which the surgeon is operating. This avoids the necessity of employing forceps. So-called double guillo-

* This last objection certainly does not obtain in the case of electrolysis, or in application of the continuous current without needles; but such a process is too tedious and troublesome to be recommended for general use.

tines, constructed to remove both tonsils at once, like most instruments that attempt too much, often fail to be of any use whatever. When it is required to remove both tonsils, it is better, having excised one, to withdraw the instrument, dislodge the removed gland, and to quickly re-introduce the guillotine on the opposite side, before the patient realizes that there is a second operation, and also before haemorrhage sets in. By this measure one operation and one sore throat only are necessary, and the risk is avoided of a young patient refusing to allow of a repetition.

Where the gland is very large, and especially where it grows down along the side-wall of the pharynx, it is not always possible to get the rigid ring quite round the tonsil. In such a case a wire-loop guillotine may be employed. The writer employed the galvano-cautery loop in one instance of this kind; but while there was no advantage over the ordinary cerascuer, the after-pain of the eschar was much greater. This process is not therefore to be recommended.

There is but seldom haemorrhage after removal. Should it occur, similar treatment to that recommended after removal of the uvula is to be adopted. Occasionally secondary haemorrhage may take place a day or two after removal, but is easily stopped. The most troublesome case the author ever saw was brought about by irritation from a crumb of toast. All food, therefore, for a day or two must be soft in consistency and of mild temperature. In another instance,—that of a domestic servant, bleeding occurred on the third day after removal, while she was kneeling and cleaning door-steps.

The surgeon is often asked, "Are any ill effects

likely to take place after removal of the tonsils? Will the patient be more liable to suffer from cold, or to contract diseases such as diphtheria? Will the voice be likely to suffer?" To all such questions most positive answers may be given that nothing but good can follow from this operation in suitable cases. It would, perhaps, hardly be credited that prejudice still exists against this operation, from a belief that it may arrest sexual development. Recently, however, such an ignorant thought was suggested to the parents of a patient, *after* the operation, by a homœopathic practitioner. It is not necessary to confute this remnant of tradition with serious argument, but it is interesting to allude to the fact that Chassaignac pointed out that while hypertrophy of the tonsils tends to arrest sexual development, their removal favours it.

ATROPHY OF THE TONSILS.

This condition, as truly stated by Wagner (Von Ziemssen's Cyclopædia, vol. vi.), has been practically but little investigated. In justification it may be pleaded that it is only *hypertrophy* for which the surgeon's aid is usually sought. The disease, if such it be, is admitted to be often only discovered in the dead subject; and since it is further allowed that "many observations go to prove that persons with congenital or acquired atrophy of the tonsils are less subject to almost all the diseases of the tonsils, especially the ordinary inflammation,—diphtheritis in its various forms, and syphilis," it is not surprising, nor to be lamented, that "*clinically*, atrophy of the tonsils has received but little attention."

Only one variety described by Wagner under this

head is of interest,—that in which there is dilatation and blocking-up of the lacunæ, without corresponding parenchymatous hypertrophy; but this affection—known to English surgeons as *chronic follicular disease of the tonsils*—is well recognized, and has already been treated of in these pages.

BENIGN GROWTHS ON THE TONSILS.

These are occasionally seen. They are, for the most part, simple hypertrophies of the mucous membrane, which have become more or less pedunculated.

They offer no special points calling for particular remark; but if they occasion annoyance, a simple remedy is found in their ablation.



Fig. LL.—CALCAREOUS FORMATION extruded from the tonsil. Exact size.

Calcareous concretions not unfrequently occur in the tonsils, and are the result of degeneration of the arrested follicular secretion. One such is here delineated (Fig. LL). Often they have a coralline appearance from extension into the lacunæ ramifications.

CANCER OF THE TONSIL (Figs. 34 and 35, Plate IV.).

Malignant disease in this region is decidedly rare. The author has seen only six cases in eleven years, or about 1 in 5,000 cases of throat disease.

In his experience the growth has been always primary, and the variety either that of scirrhus or

encephaloid. Some authorities, however, notably Mandl, say that cancer of the tonsil may be secondary. This it never is in the ordinary acceptation of the term, though the tonsil may be attacked by cancer either of the scirrhous or epithelial variety, by invasion of the disease from the tongue or other part in its immediate vicinity. This also is rare, and the only case the author has seen was that of a patient under the joint care of Mr. Lloyd, of Bloomsbury, and of Dr. Llewelyn Thomas. The appearance is delineated in fig. 34, Plate IV.

In neither of the cases of scirrhous cancer was the pathological nature of the growth distinguishable by its stony hardness; thus well illustrating the remark of Mr. Moore (Holmes's "System of Surgery," vol. i. p. 554), that "this character is far from being universal or pathognomonic" of this form of cancer. In two of the cases, however, the glands in the neighbourhood were characteristically indurated.

In one case, which is at the present time (December, 1877) under observation, the cervical glands, though much enlarged, are by no means hardened. Microscopic examination of portions of the tumour which have been removed on two separate occasions gives undoubted evidence of its scirrhous nature.

There is but little apparent enlargement of the tonsil itself, since infiltration of the surrounding tissues obscures any definition of the tumour. So much is this the case, that a correct diagnosis is generally arrived at rather from a careful consideration of the general and commemorative signs than of the subjective symptoms, or from the physical examination of the gland itself.

Thus all functional symptoms, as well as all physical signs, will bear a strong analogy to those of any inflammatory tonsillar affection. **Voice** will be thick, **articulation** impeded, **respiration** obstructed, **deglutition** painful, and the special senses impaired. Physically there will be redness, thickening with displacement, possibly ulceration and disorder of secretion. Examining more closely, we shall find that the **pain** of malignant disease is much more severe than in any benign inflammation of a chronic character. It is, in point of fact, very like the pain of quinsy, only lasting for months, instead of for four or five days. Pain in the ears, so characteristic also of similar disease in the larynx, is a distinctive symptom. The **colour** will be seen to be of a dusky, livid red; the infiltration will extend far beyond the ordinary bounds of inflammation; the **secretion** will be thin and sanious, not thick and cheesy, as in follicular diseases, and it will be very offensive. It will require to be constantly cleared from the mouth, and will also be discharged freely from the nostrils.

The general health will have greatly suffered, nutrition will have been impaired, and the patient will be found steadily to lose weight. He will be painfully depressed, and will present the well-known signs of the cancerous cachexia. As previously mentioned, the infiltration and induration of absorbent glands in the neighbourhood will be especially noticed, and there may possibly be signs of co-existent disease in other regions of the body. Lastly, there may be evidence of hereditary taint.

PROGNOSIS, it need scarcely be said, is most unfavourable, although the progress of the disease may

be very slow, and the patient experience temporary relief on occurrence of ulceration or haemorrhages. Death occasionally occurs suddenly, and is in that case generally due to haemorrhage or to sudden secondary œdema of the larynx. An instance of this latter kind recently occurred in the Central Throat and Ear Hospital. The patient, a man æt. 44, was admitted on account of a malignant ulceration at the base of the tongue, not involving either larynx or tonsil, but there was an enormous indurated mass at the side of the neck, extending from the angle of the jaw right down the length of the trachea. The man died suddenly with barely a spasm, and on *post mortem* examination œdema of the epiglottis and left ary-epiglottic fold was found. The larynx was otherwise healthy, except that the left recurrent nerve was inextricably involved in the mass, and there was wasting of the left posterior crico-arytenoid muscle.

TREATMENT.—Temporary relief may be given by the removal of portions of the tumour by means of the ecraseur or galvano-cautery ; but there are no means of eradicating the disease, or even of otherwise arresting its slow and certain march to a fatal issue. As palliatives, the local application of chloride of zinc, iodine, iodoform, or chloral, may be recommended, with external plasters of belladonna, and the like. Similarly, sedatives may also be applied to the external auditory meatus, to relieve the distressing earache alluded to (Form. 47, 39, 46, and 41).

CHAPTER VIII.

CATARRHAL INFLAMMATION OF THE NASO-PHARYNX.— POST-NASAL CATARRH.

THE naso-pharynx is peculiarly susceptible to inflammation caused by catarrhal influences, which may be acute, subacute, or chronic. Acute inflammation may be subdivided, in the same manner as when situated in the lower pharynx, into simple catarrhal, simple subacute, and phlegmonous. The chronic inflammations are of two kinds: 1. Moist, accompanied by excess of mucous secretion, with hypertrophy of gland-tissue corresponding to ordinary pharyngitis with granulations. 2. Dry or atrophic, corresponding to pharyngitis sicca. The second is usually, indeed, but an advanced stage of the first. The naso-pharynx may be primarily attacked by the inflammatory process, or the disease may spread as an extension from that in the lower pharynx; the inflammations due to the exanthemata, to typhoid, and to erysipelas, are always thus secondary. Diphtheria, also, when it attacks the posterior nares, invariably invades that part by continuity from the fauces.

The great richness in vascular and glandular supply of the naso-pharynx naturally predisposes to hyperæmia and to disorder of secretion; while the character of the epithelium and of the submucous tissue

renders it very liable to be swollen on the occurrence of comparatively slight excitants to active congestion.

Hence we find that the troubles caused by post-nasal catarrh are those which would be expected from capillary engorgement, increased follicular secretion, and serous infiltration of the submucosa.

It is quite impossible within the limits of this work to consider in detail the varying symptoms in the several degrees and stages of post-nasal catarrh. It will be sufficient to allude to them generally, and to make brief note of special points of distinction.

SYMPTOMS: A. **FUNCTIONAL.**—**Voice.**—The resonant quality of the voice is lost, and the nasal consonants *m* and *n* are changed, because the passage of the nasopharynx through which they are sounded is obstructed. In such a case it is common to say that the person “speaks through his nose”; in point of fact, that is just what he does not do—he speaks *without* his nose.

Nasal Respiration is impaired. The patient snuffles, and breathes aloud with open mouth, the countenance thereby acquiring a gaping, stupid expression. Unless the tonsils be enlarged, the patient does not snore; this act of snoring being, according to Michel, due to obstruction of both fauces and nares, which causes the inspired air to be rarefied, and to produce a flapping up and down of the epiglottis. Healthy respiration through the nostrils warms and moistens the air, and also filters it of particles of dust, &c. Anything, therefore, which tends to stoppage of the nostrils acts injuriously, according to the extent the respiration is affected in these respects. Cases of asthma have

been reported due to polypi or other cause for stenosis of the nasal passages.

Cough.—There cannot be said to be true cough, but there is a frequent hawking to get rid of adherent mucus; this symptom is aggravated if the patient has been long exposed to dry or dusty air, or has been without drink, which of course moistens the secretion, and relieves the desire to clear the throat; and the mucus so discharged is generally expectorated in the form of pellets charged with atmospheric colour-impurities, and is often tainted in odour.

Hearing is always more or less affected in inflammation of the naso-pharynx. This may be due either to extension of the inflammation along the Eustachian tube to the tympanum, or to obstruction of the faucial orifice of the tube, and swelling of the mucous membrane, or to the presence of excess of mucous secretion. In chronic post-nasal catarrh deafness may become permanent by the accumulation of inflammatory products in the tympanic cavity, with other consequent changes, or by proliferation and thickening of the sub-epithelial lining.

Tinnitus, of a sea-shell hissing or buzzing character, is also a very frequent and annoying symptom.

The senses of smell and of taste are always more or less impaired.

Pain is not experienced to an acute degree in naso-pharyngeal inflammations, except when associated with the graver exanthemata or with crysipelias. It is seldom distinctly localized, and is generally felt as either a frontal or an occipital headache, with a sensation of great tension and fulness.

All recent inflammations commence with a feeling of

dryness and tingling in the throat and nose, which is followed by sneezing and outpour of secretion. In the chronic condition there is "a sense of fulness deeply seated in the back of the nose, with a stinging and tingling sensation about the uvula, soft palate, and posterior part of the hard palate. This sensation is much aggravated after sleep, so that the patient *wakes every morning with a sore throat*; but, on examination of the throat, no inflammation, ulceration, or swelling is detected." — (Dobell on "Winter Cough," 3rd ed. 1875.) Pain in the ear, due to nerve-irritation, especially during deglutition, gaping and yawning, is often complained of, even when the acute inflammation has not extended to the tympanum.

Epistaxis is a well-known and troublesome symptom of post-nasal congestion.

B. PHYSICAL.—Colour.—The posterior pharyngeal wall will have all the appearance of pharyngitis in its various stages. The hue of the mucous membrane of the naso-pharynx, naturally brighter than that of the lower pharynx, is frequently intensely red in acute inflammations, though the amount of capillary congestion, as evidenced by colour, may be masked, if there be much submucous infiltration. On this account it will be often noticed that, with generally diffused vascular engorgement, the mucous membrane, tightly bound down as it is at the anterior nares, will appear much more inflamed, as seen by looking into the nostrils, than that of the naso-pharynx, as seen by the rhinoscope. In phlegmonous inflammations, due to specific toxic causes, the colour is sometimes seen to be almost purple scarlet.

When the catarrh becomes chronic, the hue will be

still further changed by the colour of the mucus secreted in the passages, and sometimes by incrustations covering the turbinated bones. In this connection it may be mentioned that even in the healthy subject there is almost always some mucus gathered around the orifice of the Eustachian tubes.

In the atrophic stage the mucous membrane will be noticed to be pale and opaque. In general anaemia, and in the subjects of laryngeal phthisis, there will also be diminution in the depth of colour. In judging of the condition from this sign of colour, it must not be forgotten that hyperaemia may be caused by disease of the circulatory apparatus, irrespective of any local inflammation.

Form and Texture.—Thickening of the lax submucous tissue in the naso-pharynx has been already alluded to as an early sign of inflammation in that region. In acute catarrh, oedema is, for the same reason of loose attachment, not uncommonly seen. This thickening continues through all the chronic stages as long as there is increased glandular activity. In those scrofulous subjects liable to enlargement of the palatine tonsils this is frequently substituted or associated with general thickening of the pillars of the fauces, leading to narrowing of the post-nasal passages (fig. 15, Plate II.), and chronic hypertrophy of the glands at the vault of the pharynx. These conditions can often be well made out by digital examination. It will be felt that the septum is thickened on one or other side, often to such an extent that a polypus will be suspected. The granulations at the roof of the pharynx often hang down like fungi, and the sensation to touch is very different from that of the

velvety, slightly corrugated surface of health (fig. 41, Plate V.).

Loss of tissue (ulceration) is seldom found except as a result of phlegmonous inflammation or of advanced syphilitic disease. This opinion is in accordance with that of most authorities of the present day, but is quite contrary to traditional notions on the subject.

Primary caries of the spongy bones, that is, without any superficial ulceration, is, however, not unfrequently met with in young persons of strumous diathesis, in whom it is difficult to make out a syphilitic history.

Cicatricial narrowing, as evidenced in fig. 39, Plate V., may be considerable, as the result of syphilitic ulceration. Adhesion of the soft palate to the posterior pharyngeal wall, entirely or partially closing off the naso-pharyngeal passage, is by no means unfrequent.

Compression of one or other posterior nostril is often seen, independently of the presence of morbid growths from inflammatory thickening of one side pressing the septum out of the median line.

Secretion.—Alteration of the normal secretion both in character and amount is the symptom causing the greatest amount of inconvenience, and leading to the greatest amount of functional disturbance.

If a number of cases of nasal catarrh be observed, it will be seen with what regularity the pathological changes in the mucous tract take place—changes which it is perfectly unnecessary to describe,—until, at last, “when the catarrh has become chronic” (to quote the admirable pathological description of the general complaint from Dr. Aitken), “the evidence

of this chronicity is seen in the extensive pigmentation of the mucous surface, which has been so frequently implicated in the morbid process. It has a brownish colour, from the pigment derived from oft-repeated ecchymosis in its substance (mixed, it may be added, in the case of the post-nasal form, with material from the external atmosphere). The submucous tissue becomes thick, firm, and hypertrophied; the blood-vessels varicose, and gorged with blood. The mucous secretion is now made up of an opaque, yellow-coloured, tenacious substance, composed of cells indistinctly granulated, and containing divided nuclei—‘a muco-purulent secretion’—where the mucus cannot be distinguished from the pus-cell. The results of catarrh are seen in ulceration, polypous growths from the long irritation of the surface, thickening and induration of the submucous tissues.”

To more minutely describe the character of the secretion in the various stages of catarrh, it may be said that its first characteristic is its viscosity and tenacity; secondly, the comparatively early stage at which it assumes a purulent or muco-purulent character; and, lastly, the common co-existence of blood in the out-poured discharge.

Another characteristic is its great tendency to foetor, even when there is no ulceration. It is probable that this is simply due to retention. The case quoted at p. 119, in which mucus, obstructed in its flow by the presence of spinal curvature, was foetid both to taste and smell, but in which there was no disease whatever in the pharynx or naso-pharynx, strongly corroborates this view.

C. MISCELLANEOUS.—The general health is affected much in the same way, and from the same causes, as in catarrhal inflammation of the lower pharynx.

TREATMENT.—As regards the treatment of this condition, the general indications are precisely those already laid down for ordinary pharyngitis in its corresponding stages.

Local.—If the patient complain principally of trouble in the nasal passages proper, he is ordinarily advised to take snuffs, or he is told to draw up water, or salt-and-water, through the nostrils; or to apply medicated glycerines to the back of the throat. It is not generally known how very irritating all undiluted preparations of glycerine are in catarrhal conditions of mucous passages, from the peculiar attraction of glycerine for water. Though stimulating, in the first instance, to increased flow of mucus, these applications tend to considerably aggravate after-discomfort. Of recent years, the nasal douche of Weber of Halle has become a favourite remedy; and in cases where the mucus has not lost its fluidity to such an extent as to become actually incrusted on the membrane, the nasal douche is very valuable. In a very large proportion of cases, however, it utterly fails, unless previous treatment have been adopted, to do more than relieve; and in not a few it introduces a new element of trouble, to be spoken of presently. It is to these two last points that it is desirable to draw attention, and to indicate the appropriate treatment for permanent relief, as well as for prevention of recurrence of this most distressing affection.

Naturally, the first thing to be done in these cases

is to endeavour to restore normal mucous secretion—that is to say, to render it more healthy in quality and to diminish its quantity. Most of the remedies directed to the former end are likely, in a large number of cases, to at first aggravate the amount of secretion, since applications of carbolic acid, iodine, and permanganate or other salts of potash, especially if they be mixed with undiluted glycerine and made with a brush, only stimulate the follicles to increased action. On the other hand, gargles of tannin, alum, or astringents, are useless remedies, and serve only to dry up still further the secretion, and cause it to become still more incrusted. Atomized inhalations are often of service, but they do not reach the whole seat of the disease; and, as pointed out, in many instances, the atoms even of fine spray appear to produce, by their mere presence, and irrespective of their chemical composition, increased local irritation. For the same reason, all forms of snuff or of powders, in the treatment of naso-pharyngeal affections, are objected to, the mucous membrane of these passages not being constructed by nature for their reception.

The best method at the commencement of treatment of a case of post-nasal catarrh is to employ steam-inhalations. If there be actual inflammatory soreness of the passages, an inhalation containing compound tincture of benzoin is the most soothing, with or without chloroform. This latter agent has a greatly increased effect when mixed with steam: cases have occurred where the inhalation of even one drop in a pint of water at 150 deg. Fahrenheit produced giddiness and nausea. Three or five drops should be the maximum to one teaspoonful of compound tincture of benzoin, in a pint

of water at from 130 to 150 deg. Fahrenheit. The inhalation should be used by both mouth and nostrils ; being employed first by the mouth, and then, at a lower temperature, by each nostril (Form. 22 and 23).

When there is not actual soreness of the mucous membrane, inhalations should be stimulating ; as those of benzole, creasote, or pine-oil (Form. 25, 28, and 30).

When the mucous secretion is very dry and incrusted, so that the pharynx is seen to be glazed over with a shiny tenacious coating, mixed often with dust, soot, or, as in the case of various trades, with atoms of metal or grit, aldehyde added to any of the inhalations mentioned has an almost marvellous effect in rendering the secretion liquid (Form. 26). This remedy is, however, liable to increase embarrassment of breathing, where there is bronchial catarrh or an asthmatic tendency, and in the unnecessarily large quantities often prescribed it frequently causes headache : one drop to each inhalation is ample for the purpose required. Where there is any evidence of deafness, the patient should be directed to force the inhalation two or three times at each inhalation through the Eustachian tubes by the Valsalvan method,—taking a mouthful of vapour, closing mouth and nostrils, and making a moderately forcible, but not too prolonged, exspiratory effort. The effect of this treatment alone is often remarkable in the speedy relief obtained, especially if Politzer inflation be performed at intervals by the surgeon : but it is not enough ; the patient will still experience dryness of the throat when driving, or when exposed to dust or to easterly winds, and on waking in the morning.

Lozenges, therefore, calculated to promote salivary secretion, are of service; such as the effervescing chlorate of potash. Being antiseptic, they are very grateful in rendering the breath of the patient more agreeable than is generally the case in sufferers from post-nasal catarrh. Trial has lately been made of some effervescing lozenges containing salicylic acid. They are sharply acid, but not disagreeable to the taste, stimulate the secretion, and are of course somewhat antiseptic; but they are not to be preferred to those containing potassic chlorate, since from their acidity they more quickly produce erosion of the mucous membrane of the mouth and tongue. If the fauces are relaxed, the compound eucalyptus lozenges are indicated (Form. 18 and 14).

Applications of vaseline, with three to five grains of carbolic acid and iodine in each ounce, and with atropine where there is tendency to recurring coryza, may be made to the anterior nostrils with the very best results, the patient passing a camel-hair brush charged with the application far up each nostril once or twice a day, and then deeply inhaling by the nose (Form. 70).

Applications of iodoform dissolved in ether or mixed with vaseline are also of great service in reducing hyperæmia and thickening (Form. 46).

Remembering that over and above the local catarrhal tendency the diathesis of patients suffering from the affections under consideration is generally of a scrofulous character, constitutional treatment is all-important. The iron phosphates and phosphorized cod-liver oil are always of service where they can be borne. Hydrochlorate of ammonia in 20-grain doses, with cinchona, has a peculiar effect in relieving the catarrhal

disposition. This salt was a favourite remedy with the late Mr. Hinton for tinnitus, but was found by him to be very unequal in its effect. That distinguished aurist confessed himself unable to account for its action, or to explain in what cases it might be expected to do good. Further experience of the drug leads to the conclusion that it is by its action on the mucous membrane and capillary vessels, and that the cases in which—as it undoubtedly does—it gives marked relief from tinnitus, are invariably of a catarrhal nature (Form. 53).

In other cases, especially where there is an eczematous condition of the external meatus, the diathesis is gouty. Here, moderate saline purgatives and alkaline chalybeates are indicated (Form. 59 and 60). In all cases it is advisable to restrict the amount of fluid food to a minimum, and to forbid the use of beer or spirits. Light claret or Burgundy are the best wines for such cases, but are not necessary. All forms of pepper should be interdicted, as well as salt meat. Fresh salads are both grateful and serviceable.

When post-nasal catarrh has been of such long standing that excoriation or ulceration of the mucous membrane and submucous tissue of the nasal passages, or even necrosis of the turbinated bones, has taken place, something more than the measures here indicated are required, and the most common recommendation is use of the anterior nasal douche already referred to. Its action is to irrigate the passages and to wash away a portion of the accumulated foetid secretions. It not unfrequently, however, fails to do this. Nor is this the only objection to its use. It almost always produces pain over the brow, though this may be diminished by employing the

water at a temperature of blood-heat, by increasing its density by the addition of salt, and by not using too large a quantity at a time. Condy's ozonized sea-salt has been recently prescribed by the author and found to be more effectual than common salt, and more convenient than what he formerly recommended ; namely, a teaspoonful of table-salt and a teaspoonful of solution of permanganate of potash in each douche. As to quantity, not more than a tumblerful (half a pint) should be employed each time, and night and morning is quite often enough for its use. There is still another objection to the anterior nasal douche in addition to this matter of pain, which latter is capable in some instances of being prevented by the precautions just indicated. Dr. Roosa* has produced incontrovertible evidence, by the relation of a number of cases occurring in the practice of several different accurate observers, that the anterior nasal douche does, in a considerable number of cases, induce acute aural inflammation. Prior to reading his works, the author was frequently obliged to discontinue its use, from patients complaining of earache, and of some who had not previously noticed it becoming conscious of gradually increasing impairment of hearing. Dr. Elsberg's argument, that because he had never seen such a result, although he had prescribed and employed the douche in more than sixteen thousand cases, is ably met by Dr. Roosa's suggestion : "That when an accident to the ear occurs, the patients are more apt to consult a person who is in the habit of treating aural disease than to go on with the treat-

* "Diseases of the Ear," 3rd edition, pp. 291, *et seq.* (New York : 1876.)

ment of the nasal catarrh. Besides, as is believed by many otologists, it is possible that the douche sets up a chronic inflammation of the tympanic cavity without any acute stage, and thus the true cause of the insidious chronic catarrh is passed over, and supposed to be an advance of the naso-pharyngeal inflammation. Of course, it is not advanced that the use of the nasal douche will necessarily cause aural disease, but that it is a dangerous means of treatment, which should be carefully watched by the practitioner." Attached as he is to a hospital which treats in the same institution diseases of the throat and ear, when occurring either separately or combined, the author has had opportunities of seeing the use of this remedy, and most fully concurs in all that Dr. Roosa says.

The effect of the posterior nasal douche is remarkable in the speed with which it relieves the dryness and restores resonance and clearness of voice in these cases. The same remedies are employed with the posterior as with the anterior nasal douche. (The solution most generally useful is very dilute tepid carbolized water, about 1 to 500, a grain to the ounce.) The relief is more rapid and effectual in most instances; it is not necessary to use it so often, though the two may be used concurrently, or the anterior douche made to continue the treatment effectively commenced by the posterior. It causes no pain, and, according to present experience, is never attended with any aggravation or production of aural complication (Form. 48, 49, 51).

The author has found very remarkable benefit from the employment as a nasal douche of a fluid recently introduced as a disinfectant and antiseptic, under the

unfortunately empirical title of "Sanitas." This fluid is said to be "a solution of peroxide of hydrogen and camphoric acid, and is capable of liberating or evolving, on contact with putrescible or disease-brewing matters, several times its own volume of nascent oxygen";—in other words, it is an *oxidiser* or *disinfectant*, as are ozone, peroxide of hydrogen and permanganate of potash; and at the same time it is an *antiseptic*, as are carbolic, salicylic and camphoric acids. To these qualifications may be added that its odour is agreeable, that it is colourless, and that it neither stains nor destroys linen textures (Form. 50).

Allusion has been made, in speaking of the hypertrophic form of post-nasal catarrh, to the thickening of the tissues attached to the vomer, with or without granulations at the vault of the pharynx, so common in young persons of serofulous habit.

Such cases are most difficult to treat; but the practitioner is naturally indisposed to allow them to pass uncured, since chronic narrowing of the nasal passages, with constant loud breathing and open mouth, when occurring in young people of good position, is a great social drawback.

Encouraged by the success which has attended operations on this region by means of the galvano-cautery, and seeing that all mineral caustic applications, especially nitrate of silver, tend rather to irritate to fresh inflammation and to new growth, that all cutting operations are inadmissible on account of haemorrhage, and that dilatation is ineffectual and most painful, the author recently determined to employ the galvano-cautery for destruction of overgrowth of nasal submucous tissue and granulations.

The case was that of a young lady, aged 17, of handsome personal appearance, who suffered to an extreme degree from this affection. The condition of her pharynx is illustrated (the exact size of nature) in fig. 15, Plate II., and of the posterior nares in fig. 41, Plate V. On the 2nd of November, Mr. Clover administering chloroform, and Dr. Brandeis assisting, into one nostril the bulbed cautery-point figured at page 75 was introduced, and the tissue destroyed, first on the side of the vomer, and then, turning the point upwards, the bulb was passed over the whole surface of the pharyngeal vault. Withdrawing the instrument, the same process was repeated with the opposite nostril. There was barely a drop of blood lost, very slight after-pain or discharge, and in a week the patient could from either nostril blow out an ordinary wooden match at a distance of eighteen inches. She is able to breathe now with mouth closed, and even in sleep the mouth is but very slightly kept open, while the respiration is noiseless.

CHAPTER IX.

DIPHTHERIA.

(Figs. 42, 43, Plate V., and Fig. 55, Plate VI.)

WHETHER or not this "contagious miasmatic" affection be considered as a general infectious disease, entirely independent of any previously existing local disease, or whether, as is more probable, it commences locally and spreads from the point first attacked through the whole body, its manifestations in the pharynx, nares, larynx, and trachea, are so much the most frequent and important evidences of the action of the contagion, that their consideration could not well be passed over in a work like the present. Occupying also, as the disease does, common ground of both the pharynx and larynx, it will be best treated in this place.

Consideration will, however, be principally limited to enumeration and description of such local symptoms and signs as will best assist the practitioner in making an early diagnosis; no attempt will be made to decide the vexed question of its identity, or non-identity, with membranous croup; *so far as the broad general question is concerned.* The author hesitates to give an opinion contrary to that of many eminent physicians, headed by Sir Thomas Watson and Sir William Jenner in this country, and of such

careful observers as Bretonneau, Troussseau, Oertel, Steiner, &c., abroad; but he feels it incumbent upon him to draw attention to certain local evidences of the disease which appear to offer well-marked distinctions between diphtheria and membranous croup, or membranous laryngitis, as it is termed in modern pathology; and also to certain general constitutional symptoms, believed to be equally distinctive, which present themselves during the time the local condition is under observation and treatment.

Diphtheria is *primary* or *secondary*. Neither the clinical nor the anatomical characters vary, and both kinds may for purposes of description be considered under one head. *Primary* diphtheria attacks persons previously in good health, and it may be manifested endemically or as the result of an epidemic, of direct contagion or of some deficient sanitary condition not well understood, of inspired atmosphere or water-supply. *Secondary* diphtheria occurs as a complication in scarlatina, measles, and small-pox, or of typhus, cholera, pyæmia, puerperal fever, &c.

SYMPTOMS: A. FUNCTIONAL.—These may be considerably modified, according to the gravity of the attack, which is so varied that Sir William Jenner has tabulated diphtheria into six different forms. Wagner, again (Von Ziemssen's "Cyclopaedia," vol. vi., article "Pharyngeal Diphtheritis"), divides the pharyngeal disease into three varieties: the milder, with hyperæmic and serum-infiltrated surface of tissue beneath the deposit, being termed *croupous*; the second with haemorrhagic and sero-purulent base, *diphtheritic*; and the third, still more severe, *gangrenous*. This is, however, a decidedly retrograde classification, since it

perpetuates the misleading term "croupous." It is sufficient to say that these varieties, like many others, are of degree only, as are those of scarlet fever and variola; and that an attack, commencing apparently as but a mild affection, may run into the gravest extremes. A very rare form of diphtheritic hyperæmia without exudation, but in which the sequelæ of diphtheria occur, is occasionally seen in those who have been in attendance on diphtheritic patients. It is important to note that this form is confined almost exclusively to adults.

The first sign of an attack of diphtheria is that of simple sore throat. At an early date, even before the larynx is affected, the voice will be distinctly rough and hoarse, and deglutition will be attended with discomfort. Should the disease extend to the nose, there will be an offensive, irritating discharge from the nostrils, and fluids will return through those passages.

When the air-passages are involved, the local symptoms are very similar to those of true membranous laryngitis; that is to say, there is sharp, ringing cough, later becoming aphonic, with embarrassed respiration, and membranous expectoration.

B. PHYSICAL.—The fauces, at first red, will be noticed to soon become the seat of patches of exudation. These patches will be seen to grow in thickness, to become tougher in consistence, and to extend in area. Their colour, from a pellucid white, or grey, will gradually assume a dirty brownish, and even blackish hue; if removed, they will leave exposed an ulcerated surface, with many bleeding points, quickly, however, hidden by fresh exudation. The whole

general tissue of the palate, even where the patches do not exist, will be observed to be changed in colour, and to assume, at first, a livid, and, later on, a dusky-greyish tinge. Examination of the nares, especially if they be first washed out with warm water by means of the post-nasal douche, will show that they are in much the same state. On laryngoscopic examination, should the exudation have extended so far as the larynx, it will be noticed primarily about the epiglottic, the ary-epiglottic folds, and the arytenoid cartilages. At a comparatively early period portions of the membrane will be seen to be detached in the larynx, probably by coughing, long before there will be any separation of the earlier-formed patches from the fauces. The exudation may extend further down the trachea into bronchi of even fine calibre.

C. MISCELLANEOUS.—The general health suffers throughout the whole course; and sequelæ of an extreme character are a result of this affection. The disease is always ushered in by general malaise of from a few hours to a week's duration, followed by pyrexia, the temperature remaining very high through the whole course of the disease. The heart's action soon becomes enfeebled, and asthenia is one great obstructive to all efforts at combating the malady, and is not unfrequently the actual cause of death.

Diarrhœa is often an early symptom, though evidence of the disease is seldom found in the digestive tract. A marked tendency to the presence of albumen in the urine is well known. The glands in the neighbourhood of the throat are frequently much inflamed and infiltrated. Surface sores and wounds of a patient suffering from diphtheria, or of those attending

diphtheritic patients, will take on a peculiarly unhealthy character. The part will be painful, and there will be a deposit analogous to the faucial exudation on the sore place or wound, with offensive discharge.

DIFFERENTIAL DIAGNOSIS.—This should not be really difficult, even at an early period, as a comparison of the plates of diphtheria with those of other faucial diseases will clearly illustrate.

When the disease attacks only the tonsils, the adherent character of the exudation and the appearance of the part when that exudation is removed, clearly distinguish it from the creamy deposit in simple follicular inflammation. Above all, the deposit upon, and especially behind, the uvula is to the last degree characteristic.

No other disease is liable to attack in such quick succession the fauces, nares, and air-passages. It is the commencement of the disease in the fauces which seems to be the stumbling-block in the way of those who would identify the disease with true membranous croup.

Consideration of the question is often, therefore, limited by them at its very outset by the statement that identity is claimed only for membranous croup and for laryngo-tracheal diphtheria. Such a *petitio principii* cannot, however, for one moment be allowed, since the faucial origin of the disease is one of the many essential differences between the two maladies.

Steiner, however (Von Ziemssen's "Cyclopædia," vol. iv.), scorns to take such advantage. He acknowledges "only this difference, that in croup the exudation takes place *upon* the free surface of the mucous membrane, while in diphtheria it occurs at the same

time *within* the tissue, and thus produces necrosis and loss of substance of the mucous membrane." The same writer, however, opines that "every one must admit," that what is diphtheria in the pharynx may be only true croup upon the mucosa of the larynx and lower air-passages, which is, perhaps, a more audacious instance of begging the question than the other just mentioned; since his inference from clinical facts is against his theory, not for it. Diphtheritic inflammation, commencing in the pharynx, may proceed to exudation, with increase of deposit and progressive necrosis of the under tissue, for some days before the disease has extended to the larynx, when a fatal termination may rapidly ensue, either from general asthenia or from some other cause outside the air-passages, or from suffocation due to mechanical obstruction to respiration, from the mere presence of false membrane in the glottic space. After death it will naturally be found that the disease is more advanced in the pharynx than in the larynx. In the former it may have reached the gangrenous stage; in the latter there may have been only exudation of false membrane, with nothing more than serous infiltration of the sub-tissue—the *croupous* stage of Wagner.

The statistics of Wagner, also an identitist, given in the same Encyclopædia (*loc. cit.*), support this view, for, with a personal experience of forty-six *post-mortem* examinations, this writer reports that while, on the one hand, in thirty-nine cases the patient died with evidence of laryngeal extension of false membrane from the pharynx, in four death had taken place without extension into the larynx; and in only three cases did death occur without membranous deposit in

the pharynx. What does this prove except that pharyngo-laryngeal diphtheria is alarmingly fatal; that diphtheria may occasion death without extension to the larynx, and, on the other hand, that a fatal result may comparatively rarely occur from simple membranous laryngitis (true croup of old authors)? To be asked to believe that because cases occur in which the disease is more advanced in the part first attacked than in that later invaded, therefore simple inflammation of the larynx, with membranous exudation, is the same as extension into the larynx of diphtheritic disease, is, without any other consideration, as reasonable a proposition as to argue that because scarlatinal sore throat may occasionally be unaccompanied by exanthematous manifestation, therefore tonsillar angina and scarlatina are one; or on the other hand, that because the fauces are not always inflamed in scarlatina, therefore scarlatina and simple erythema are one.

The further differential points between diphtheria and membranous laryngitis have been over and over again advanced, and have never been combated. They are the asthenia, the virulent contagious character affecting both mucous and cutaneous surfaces; the local and general neurosal and other complications attending diphtheria as against the sthenic character of membranous croup, and the conspicuous absence of the other diphtheritic features. When the identitists can bring forward cases in which membranous exudation, leading to necrosis and ulceration of the sub-tissue, has commenced in the larynx, and has extended from the larynx upwards into the fauces; when they can show cases of membranous exudation limited to

the air-passages, which are attended with the complications and sequelæ common to pharyngeal diphtheria; when they can report that laryngitis without exudation, or even with exudation, can be contracted by an adult nursing a child afflicted with the latter disease; when an instance can be brought forward of an adult case of membranous laryngitis *pur et simple*, then there may be ground for argument. Until then they are not warranted in the assertion that "the attempt to distinguish croup and diphtheria as two entirely distinct diseases has been unsuccessful, both from an anatomical and from a clinical standpoint."—(Steiner). With reference to the anatomical standpoint, it may be briefly stated that any attempt to discover histological differences in membrane exuded from a mucous surface, whatever the cause, appears at first glance as puerile as to find points of difference in the structure of desquamated skin, or in the constituents of the transpired perspirations of various fevers.

As showing further that the identitists do not feel quite secure in their position, they are continually endeavouring to discover in the presence of microorganisms, bacteria, and vegetable parasites, some clue to the cause of diphtheria when it occurs in an endemic or epidemic form, or under manifest insanitary conditions.

As to the etiology of membranous croup, it is clearly defined. It is a disease of childhood; it is more frequent in the male sex; it attacks the hearty rather than the delicate; it has a decided hereditary and family predisposition; it is influenced by the season of the year; it is found to be most prevalent during moist, cold, changeable weather, and in many cases the attack

seems to be immediately due to exposure to sudden changes of temperature, or to cutting north and north-east winds. If the foregoing causes of croup, purposely taken from Steiner's article, be compared with the author's remarks on the etiology of acute or œdematosus laryngitis in the next chapter (written long previously to the publication of Ziemssen's work), the reader may consider the suggestions he has to offer as to the true nature of membranous croup and diphtheria worthy attention.

They are that membranous laryngitis (croup) in the child is analogous to œdematosus laryngitis of adult life ; and looking to the fact that diphtheria, whether primary or secondary, is more frequent in childhood than in manhood ; that this disease is more nearly allied to phlegmonous pharyngitis and laryngitis than has hitherto been conceded, or indeed advanced. Consideration of this point cannot be here elaborated, for want of space. It is only necessary to allude to the prominence of insanitary conditions as a common cause of both affections, and especially to the fact that the laryngitis of erysipelas, typhus, variola, hospital sore-throat, &c., no less than laryngo-tracheal diphtheria, almost invariably occurs as an extension of disease from the pharynx.

PROGNOSIS.—This is always serious, since there have to be taken into consideration not only the effects of a grave and but too frequently fatal disease in a vital region, but also its marked influence on the general economy, its numerous complications, and its obstinate and depressing sequelæ.

TREATMENT.—Many general remedies have been suggested, and some have been vaunted as specifics, but

the most rational and satisfactory method seems to be that of treating symptoms as they arise. Refreshing febrifuges, with chlorate of potash, hydrochloric or nitro-hydrochloric acid, in the earlier stages, with tonics directed to keep up the strength as asthenia becomes marked, may be given with advantage.

Those who look on the disease as occurring under circumstances somewhat similar to those producing erysipelas or phlegmonous sore-throat ; and especially having regard to its remarkable tendency to produce anaemia, as well as its extremely asthenic character, will be disposed to give perchloride or other forms of iron ; others, who may consider the poison of diphtheria allied to that of scarlatina, will prefer to rely upon cinchona with acid or ammonia ; other practitioners, again, may be more willing to depend upon the sustaining properties of strong and easily digested nutriment, with the moderate use of diffusible stimulants. Seeing how unsatisfactory the results of drugs are in this disease, it certainly does not appear desirable to push nauseous, and often not easily assimilated medicines, in a disease so prevalent among young children, who, in addition to having a natural dislike for medicines, experience great pain in attempts at deglutition.

The patient, even if suffering from only a mild attack, must be kept in bed, and strict isolation should be enjoined.

Locally, very much may be done. Gargles are but of little service, even with adults, but the spray or brush may be employed with advantage as long as the disease is confined to the pharynx. Under the same circumstances solutions can be applied to children by

means of the brush, or, better still, by the index finger swathed in lint. When the disease has reached the larynx, medicaments should be directed to the parts by means of Türck's laryngeal syringe, or with the brush. The most satisfactory applications in the author's practice have been those of lime-water, lactic acid, carbolic acid, and of the sulphio-carbolates advised by Dr. Sansom (Form. 34, 35, &c.). He has not had experience of sulphurous acid in this affection since the suffocative symptoms complained of by patients to whom it had been administered for other diseases appeared to contra-indicate its use in diphtheria. Many cases have, however, been reported in which its employment has been successful. The action of all these topical agents is to induce solution of the membrane, or at least to prevent its re-formation when removed, or its extension. Caustic solutions, and especially nitrate of silver, are *not* to be recommended. Emetics, also, are as cruel as they are useless; and the same may be said of mechanical attempts to tear away the false membrane. "Lastly, looking to the established fact that breaches of the cutaneous surface have a great aptitude to become the seat of diphtherial inflammation, it should be regarded as a fundamental rule never to employ blisters or other remedies calculated to produce sores" (Bristowe). Effervescent lozenges, containing salicylic acid or carbolic acid, are agreeable, even if they have not much remedial value (Form. 18). Ice is of the greatest service in diphtheria, and is much more acceptable, as well as therapeutically valuable, than steaming or warm drinks. In the case of children, as mentioned in the chapter on therapeutics, food, especially milk,

previously iced, will often be taken with avidity and with proportionate increase of benefit, when plain block ice would be refused.

The question of tracheotomy will often occur, and is a point that has been much discussed.

Certainly there is one strong reason in its favour; viz., that even if it does not save the patient's life, it does, in a very marked degree, diminish the agony of death, as well as lessen the distress of those surrounding the bedside of the sufferer. If the operation is to be performed, it should not be delayed too long.

The sequelæ of diphtheria affecting the throat will be more properly treated under the headings of neural affections of the pharynx and larynx respectively.

CHAPTER X.

DISEASES OF THE LARYNX.—ANÆMIA.—HYPERÆMIA.—ACUTE LARYNGITIS.—SIMPLE CÆDEMA OF THE LARYNX.—SUB-ACUTE LARYNGITIS.—CHRONIC LARYNGITIS.

THE larynx is subject to all the affections peculiar to a mucous tract, with certain additional disorders, due to its structural arrangement: thus we have anæmia, hyperæmia, congestions, inflammations, ulcerations, and thickenings. All these are either of a simple character or associated with some specific poison, chronic or acute, or there may be disorder of the submucous follicular secretion.

The framework of the larynx being composed of certain cartilages, disease may extend to these tissues, leading to ossification, caries, and disintegration.

Any interference with the muscles acting on the glottis will impede its free movement, so essential to healthy respiration and vocalization; or the chink may be narrowed by inflammatory thickening, membranous exudation, cicatrical adhesion, or new formations.

Lastly, external disease may invade the larynx, and so interfere with the passage of air, or permit the introduction of noxious foreign matter.

ANÆMIA OF THE LARYNX (Fig. 68, Plate VIII.).

When a patient is suffering from general anæmia, whether due to haemorrhagic loss or chlorosis, the capillary supply to the larynx may of course be diminished, in common with that to the rest of the body; and this affection, therefore, does not require particular notice. The cases in which it is of significant importance are : 1. when it is associated with functional aphonia ; 2. when, during the course of an attack of chronic laryngitis, the mucous membrane covering the ary-epiglottic folds, arytenoid cartilages, and ventricular bands, is abnormally pale, while the vocal cords are the seat of indolent congestion, the patient not being generally anæmic. In both these cases the condition may be the premonitor of laryngeal tuberculosis ; it will, therefore, when so occurring, be more properly considered in the chapter on that disease. The laryngeal mucous membrane may partake of the characteristic change of the cutaneous surface observed in cyanosis and in jaundice.

HYPERÆMIA OF THE LARYNX.

This condition seldom occurs except as the precursor or sequel of inflammation, congestion of the laryngeal mucous membrane being usually due to catarrhal influences. It must be remembered, however, that the larynx of persons in habitual use of the voice ; of those addicted to chronic alcoholism, or to the excessive use of tobacco ; of those working continuously amid acrid chemical fumes, smoke, or dust, is in a state of hyperæmia, which, though not always reaching

the stage of disease, renders the subject thereof most prone to contract more acute inflammation.

ACUTE INFLAMMATION OF THE LARYNX.—ACUTE LARYNGITIS.—ACUTE LARYNGEAL CATARRH (Figs. 44, 45, and 46, Plate VI.).

These terms are limited by the author to acute inflammation followed by effusion into the submucous tissue (œdema). This form of inflammation differs in no particular from that affecting any other mucous surface, except in as much as may be due to the varying tension of the different portions of the laryngeal mucous membrane, and to the extremely important influence which but comparatively slight œdema may exercise on the performance of vital functions. As has been suggested in the foregoing chapter, it is probable that this disease occurs in children under the form of membranous laryngitis or true croup, the difference between the submucous serous infiltration of the one and the membranous transudation in the other being explained by the imperfect capillary system of children.

ETIOLOGY.—As the name of the disease implies, catarrhal influence is the strongest predisponent, and there is no cause so frequent as a common cold.

This exciting cause may be induced in many ways: the patient sits in wet clothing, or in a draught of cold air, or drives or rides exposed to the inhalation of either the cold damp of a south-east, or the bitter keenness of a north-east wind. Certain it is that acute laryngitis frequently occurs very suddenly, and very commonly after a journey.

Probably a previously low state of the general health, or great bodily fatigue, may have assisted in bringing about the attack.

It is rare, without the association of some such atmospheric influence as has been indicated, that mere over-use of the voice, although it may predispose, is the main factor in the production of this condition; nor in the author's experience does the passage downwards of a head cold, or upwards of a bronchitis, frequently lead to really acute laryngeal inflammation.

As has been pointed out in the few remarks referring to hyperæmia, causes which give rise to that condition also predispose to acute inflammation.

The specific poisons of scarlet fever, erysipelas, typhus, and small-pox may induce laryngitis; in such cases both the primary and secondary affections are of the most virulent form. They partake of the nature of phlegmonous inflammations. False membrane is often formed, and the disease then assumes a diphtheritic character, or the inflammation leads to ulceration or extends to the perichondrium, and may terminate in caries or in gangrene.

Acute laryngitis is more prevalent at the colder and more changeable seasons of the year—viz., spring and autumn, the laryngeal catarrh accompanying so-called hay fever being an affection of quite a different nature.

Lastly, traumatic causes may produce acute laryngitis; such as swallowing hot water, or inhaling scorching hot air, irritant poisons, caustic applications, and, occasionally, injury produced by the introduction of intra-laryngeal instruments for operative purposes.

SYMPTOMS: A. **FUNCTIONAL.**—**Voice:** At first simply hoarse, with a tendency to the production of occasional falsetto or shrill notes, as from increased ten-

sion, and due probably to irritation of the superior laryngeal nerve. Sometimes, on the other hand, the voice appears abnormally bass in quality. It quickly becomes quite aphonic.

Respiration is unembarrassed except in quite the later stages of the attack, when dyspnoea appears as the result of: 1. Mechanical impediment of the action of the muscles of the larynx, the vocal cords being in a state of spasm, and the glottis fixed in a semi-patent condition. This produces stridor in inspiration, but without other complications ex-spiration is unaltered. 2. Stenosis due to oedema of the ventricular bands or of the mucous membrane covering the arytenoid cartilages, and in rare cases from a similar condition of the infra-glottic mucous membrane. 3. Spasm of the laryngeal muscles. This may be due to reflex irritation of the muscles closing the glottis, but is more frequently caused by the presence of secretion at cough-producing spots.

Cough.—In the early stage there is an uncomfortable desire to get rid of the irritation of a supposed foreign body, described as a hair or thread, in the larynx. This is very quickly succeeded by a dry, hard, ringing cough, which varies in sound, according as the vocal cords are unduly lax or tense, from a deep bass to a clear, shrill, brassy clang. This metallic character is most characteristic of true laryngitis, and is only found besides in hooping-cough and laryngismus stridulus. When the vocal cords are fixedly apart, inspiration prior to cough is loudly stridulous; as the mucous membrane becomes swollen (spasm of the larynx continuing) the metallic sound is greatly modified, and the cough assumes a com-

pletely aphonic character. This symptom of cough is very distressing: 1. on account of its spasmodic, and often incontrollable nature; 2. from the acute pain which it frequently gives; 3. because it is not until subsidence of the disease that relief is given by mucous expectoration. As soon as this occurs, the cough becomes moist, and assumes the ordinary character.

Deglutition.—Swallowing, at first uncomfortable, quickly becomes painful. This is not frequently due to œdema of the epiglottis, since the mucous membrane covering that structure is comparatively seldom infiltrated, but is rather caused by œdema of the ary-epiglottic folds and the posterior wall of the larynx, in other words, the anterior wall of the pharynx.

Pain is a distinct but varying feature of acute laryngitis, and seems to depend on the mechanical rigidity and tension of the tissues involved. When œdema is considerable, the sense of suffocation is most oppressive.

B. PHYSICAL.—**Colour:** Always increased, as would be expected, where there was intense capillary hyperæmia. When œdema takes place, the colour is changed, and the infiltrated portion has the appearance of a globular semi-transparent body, very bright in colour at the circumference. Numerous highly injected capillary vessels will be observed crossing over the larynx, and especially on the epiglottis. The vocal cords are always red, and may become almost purple.

Form and texture may be greatly altered by œdema, which may be general or partial. In laryngitis due to the exanthemata, there will frequently be characteristic appearances, in addition to those caused by

inflammation. In scarlet fever the colour will be modified in patches of varying intensity ; in erysipelas there will be the peculiar brawny character ; in typhus the mucous membrane will be dusky ; in small-pox pustules will be visible : all these distinctive changes are for the most part to be seen on the epiglottis. When the inflammation is due to the swallowing of boiling water, the epiglottis is more frequently œdematous, and, especially in young children, the whole surface may be covered by a false membrane, which differs from that of croup or diphtheria in its greater transparency and diminished tenacity. Irritant poisons often produce excoriations and ulcerations. When there is injury from a foreign body (fig. 54, Plate VI.), a portion of the mucous membrane may be seen to have been denuded, and inflammation will have commenced at the seat of injury.

Secretion at first entirely arrested, afterwards becomes excessive in the form of submucous effusion, and, as recovery takes place, is poured out as a copious mucous or muco-purulent discharge.

C. MISCELLANEOUS.—External.—There is tenderness, if not pain, on external pressure, frequently complained of, but rarely any external inflammatory alteration in form or colour ; nor are the neighbouring glands, though painful, at all enlarged.

Where, as in young children, a satisfactory laryngoscopic examination cannot be made, the diagnosis may be aided by the introduction of the finger into the larynx ; but such a course is rather to be deprecated, and in any case most sparingly employed. In every instance a laryngoscopic examination should be attempted ; and it is surprising how even a very slight

view will aid in forming a correct judgment; especially will it be so when there is the least reason to suspect the presence of false membrane.

General.—An attack of acute laryngitis is always ushered in and accompanied by general febrile symptoms, the pulse being frequent and strong, and the temperature increased, though not often rising above 103°. With the advance of the disease the respiratory movements become slower, the lungs suffer from insufficient aeration; the inflammation may extend into the bronchi, or lobular pneumonia may be set up.

Commemorative.—There is frequently a decided family predisposition to attacks of laryngeal catarrh, the parents of many young patients being found, on inquiry, to have themselves suffered in early life. Previous attacks render the patient liable to a recurrence of the affection, though the second is not often of so grave a nature as the first.

DIFFERENTIAL DIAGNOSIS.—This is not difficult if the laryngeal mirror be employed; the only diseases that can be confounded with acute laryngeal inflammation being laryngismus stridulus and diphtheria. As before stated, membranous croup is probably the form which acute laryngitis takes in childhood, œdema of the larynx, as a result of acute inflammation, being almost unknown before adolescence.

PROGNOSIS, COURSE, AND TERMINATION.—Recovery from œdematous laryngitis is always doubtful, but a favourable termination may be foretold when the patient is seen early, when the diagnosis is accurately made out, and when treatment is promptly directed to the relief of the mechanical obstruction of healthy respiration. The duration of an acute attack—i.e. the anxious

period—may not last above three or four days, but the patient can hardly be said to be out of danger under two or three weeks, and may even then be the subject of chronic inflammation. Complications may arise, as has been suggested, in the lungs, or by the supervention of croup or diphtheria on a simple inflammation. When death occurs, it is most frequently due to carbonic acid poisoning, but may arise directly from stenosis or from spasm of the glottis.

TREATMENT.—The author would advise in all cases the administration of a calomel purge; and when the pulse is full, especially in the case of strong children, would push this drug steadily, both by its internal administration in small and frequent doses, combined with James's and Dover's powder, and by inunction with mercurial ointment. In adults, after the purge, aconite administered in one-drop doses is of great value (Form. 52). Neither emetics, counter-irritants, venous depletion, nor caustic solutions are to be recommended.

Locally everything should be done to change the conditions most favourable to the causation of the disease. For this purpose the room must be kept at an equable temperature of from 60° to 65° , shielded from draughts and charged with steam. In the case of children, steam from a kettle playing near to their mouths or wrung-out hot flannels hung in the same position, will aid to this end. In the adult, the frequent inhalation, from an apparatus causing the least effort, of steam combined with volatile ingredients of a soothing or anodyne character, should be constantly employed. Benzoin, chloroform, conium or hop, are the best

remedies for this purpose (Form. 22, 23, 27, and 29). External poultices and compresses are soothing.

So soon as, and wherever, oedema is discovered, local scarification with the laryngeal lancet should be employed. There is probably no such severe disease that can be so quickly relieved by a simple local measure as can oedema of the larynx, and the operation is one of really easy performance to a practitioner having but moderate skill in the use of the laryngoscope. The relief to the local distress and the consequent general comfort of the patient is little less than magical.

When secretion is poured out as the disease advances the process may be favoured by mild expectorants (Form. 54, 65). Ice and iced drinks are very agreeable to some patients, while in other cases warm demulcents are preferred. If, in spite of scarification, or failing means for its adoption, the respiration of the patient becomes more feeble and symptoms of blood-poisoning increase, tracheotomy must be performed. When the disease is due to traumatic causes, this procedure may be necessary at a quite early period, but in uncomplicated attacks it is always better to give remedies a chance. Even when death has taken place, the windpipe may be opened, and artificial respiration tried.

Bearing in mind the liability to infra-glottic oedema, we should open the trachea as low down as possible. There is the possibility in this form, of the knife pushing the swollen mucous membrane before it, instead of dividing it, so that the tracheal tube passes between the mucous membrane and submucous wall. This is a serious accident, which will be best guarded

against by taking up the trachea with a firm tenaculum, such as Mr. Lund's, before making an opening into it.

Dietetic and Hygienic.—There is nothing particular to be said with regard to the dietetic treatment of acute laryngitis. The administration of stimulants may be necessary if the strength is failing.

Hygienic treatment during the attack is of the greatest importance, and no chance should be given, by exposure to draughts, for the recurrence of those relapses the liability to which is so great.

For many weeks, indeed, caution must be exercised with reference to night air, heated atmospheres, much use of the voice, and sudden changes in clothing. Seeing how frequently tuberculosis takes its origin from an acute inflammatory attack, as well as from neglect of chronic inflammation, it behoves the practitioner to watch the patient carefully till all functional and physical signs of inflammation have subsided, and not to hesitate, if necessary, to recommend change to a more genial climate.

SIMPLE CÆDEMA OF THE LARYNX.

Serous infiltration of the submucous tissue is, as has been seen, one of the gravest manifestations of acute catarrhal or specific inflammation, and may occur at an interval of some days after the commencement of the constitutional disorder. The same condition may, however, arise quite independently of any inflammatory process, especially as a manifestation of general dropsy, caused by disease of kidneys, heart, or lungs, or "as a result of circumscribed obstruction in the laryngeal veins, through compression of the superior and inferior thyroid veins,

or, further, of the facial vein, or even of the internal jugular, and the innominate veins. The œdema will be unilateral or bilateral, according to the site and extent of the hindrance to the circulation. Such compression may be produced by enlargement of the thyroid glands, swelling of the lymphatic and salivary glands, and new formations about the neck, aneurisms of the aorta, &c." (Von Ziemssen).

No cases of this latter character have come under the author's notice; it is therefore unnecessary to further allude to them, than to say that relief of the local condition is only of temporary benefit, unless attention be mainly given to the removal and alleviation of the primary cause.

There is, however, a variety of acute œdema of the larynx, which is somewhat frequently observed, in which the prior general catarrhal and local inflammatory stages are of such unusually short duration as to almost justify us in considering it under a separate heading.

These cases generally occur in those who, being in a low state of health, are subject to very sudden and violent exciting causes: thus a man may leave a blast-furnace, walk in the snow and sit for hours in his damp clothes smoking and drinking in a badly-ventilated, low-pitched taproom, which he leaves at a late hour, again exposed to the open air, for a small room in a close quarter of the town. Again, a cabman takes frequent nips of raw spirit, in a hot bar, to "keep out the cold" to which he is exposed for the rest of the night on his box; or, lastly, as in a case at present under treatment, a young man, tired with office-work during the day, spends his evenings prac-

tising glees at a smoking concert: he takes, on leaving, nothing more than a little cold whisky-and-water, but goes home thoroughly tired to bed.

In each of these instances the result is the same; the patient awakes from sleep, either during the night or at early morning, with a feeling of great discomfort, which speedily increases to a sense of intense suffocation. And not to go over old ground, all the symptoms of oedema are developed with alarming rapidity.

On laryngoscopic examination, the infiltration may be seen to have attacked the epiglottis, or the inter-arytenoid fold, but not unfrequently there is oedema of the submucosa below the glottis (fig. 47, Plate VI.).

This infra-glottic oedema is always serious, as the effusion is very slow in subsiding, and the disease passes into a subacute or chronic stage.

In these cases inhalations are useless, and scarifications often fail to give adequate relief, since the infiltration recurs almost as soon as removed; tracheotomy should therefore be performed without much delay.

General treatment should be of a distinctly tonic and nutritive character; so-called antiphlogistic measures being useless and even harmful.

SUBACUTE LARYNGITIS—MUCOUS LARYNGITIS (Figs. 48, 49, and 51, Plate VI.).

Under this head are considered all inflammations of a recent character not leading to oedema.

ETIOLOGY.—The atmospheric exciting causes of subacute laryngitis are exactly similar to those which lead

to the acute form, but modified by the intensity of the factor, or acting on a system somewhat less receptive of the baneful influence.

The abuse of the voice alluded to as a supposed exciting cause of acute laryngitis by many authorities, more frequently excites subacute inflammation.

In the same way irritant poisons may, if quickly counteracted, produce only modified irritation; and the laryngitis of the milder exanthemata, as measles, chicken-pox, and rötheln, always falls short of the oedematous form.

In the specific forms of laryngitis, syphilitic and tuberculous, to be presently considered, and in perichondritis arising independently of those dyscrasiæ, the inflammation seldom passes beyond the subacute stage.

An acute oedematous laryngitis may pass into a subacute form before becoming chronic, and laryngitis occurring as an associate or sequel of inflammation of either the pharynx, trachea, or bronchi, is generally of the non-oedematous variety.

SYMPTOMS : A. FUNCTIONAL. — Voice. — Gradual and increasing hoarseness, with fatigue on exertion. With much use the voice may become even aphonic during the catarrh.

Respiration.—But slightly affected.

Cough.—This is principally excited in the early stages by the uncomfortable sensations of dryness, itching, and irritation, which cause the patient to have a frequent desire to clear the throat. On subsidence of the disease, when expectoration takes place, true cough is excited whenever there is lodgment of secretion at a cough-spot. It may also be present

when the inflammation extends down the pharynx, causing irritation of the posterior wall of the air-passages.

Deglutition.—This function is not impeded unless the pharynx be simultaneously affected.

Pain is not an urgent symptom of subacute laryngitis, although there is a decided feeling of tenderness on external pressure. Actual soreness and aching are experienced if the voice be exerted.

B. PHYSICAL.—Colour is always abnormally increased, and partakes in varying degrees, according to the intensity of the attack, of the appearance of active hyperæmia. In the exanthemata previously alluded to, the characteristics of the cutaneous eruption are visible in the pharyngo-laryngeal region (fig. 51, Plate VI.). Capillary injection is always increased by use of the voice.

Position is unaltered, and there is seldom any very appreciable thickening of the submucous tissue. The ventricular bands are the parts most frequently swollen.

Secretion.—Arrested at the commencement, this becomes excessive as the case progresses, mucus or muco-pus being thrown out.

C. MISCELLANEOUS.—These symptoms being those of ordinary catarrhal inflammation, need not be detailed.

PROGNOSIS is always favourable as far as life is concerned; but the sudden character of the attack often gives rise to a not unwarrantable fear that the disease may take on a graver character. There is a strong tendency to relapse and to recurrence. The disease usually passes into the chronic form.

TREATMENT: Constitutional.—This should be to the same purport as that of the acute form, moderate purgatives and febrifuges being mainly indicated.

Local.—External fomentations and frequent soothing inhalations are as serviceable here as when œdema is threatened, or when it has subsided. All measures must, to a great extent, be expectant, and every precaution should be taken against the attack becoming more serious or relapsing into the gravest form of the disease. Topical remedies applied by the surgeon have never been found necessary or even advisable.

CHRONIC LARYNGITIS.

It will be convenient to consider this affection under three heads; viz., 1. Simple; 2. Syphilitic; 3. Tubercular.

SIMPLE CHRONIC LARYNGITIS (Figs. 50, 52, and 53, Plate VI.).

This condition most usually occurs as a sequel of a more serious form of acute inflammation, or as associated with chronic pharyngitis. There is, however, a form of laryngeal hyperæmia occurring especially in voice-using subjects of catarrhal disposition, which, while not reaching to an inflammatory stage, is so slightly remittent as to be considered essentially chronic.

ETIOLOGY.—The causes of chronic laryngitis are essentially those producing in some people nasopharyngeal catarrh, and in others chronic pharyngitis, except that in the laryngeal affection, excessive use of the voice during the catarrhal exacerbations naturally acts more injuriously on the vocal organ. This con-

dition is especially common in those who not only use their voice at all times and seasons, irrespective of their state of health, but who, when they speak, "do not mind their stops." It is, therefore, more common in extempore preachers, and still more in those who allow themselves to become greatly excited, and to violently gesticulate during their harangues.

Excessive smoking is assigned as an exciting cause of chronic congestion by some English authors, but especially by the French laryngologists, so that certain appearances peculiar to "la gorge des fumeurs" have been described at length. In the opinion of the author, however, the use of tobacco has but a very slightly obnoxious effect on the larynx, though it undoubtedly tends to induce chronic pharyngeal inflammation, especially when accompanied by frequent expectoration.

The habit of taking "*chasses*" of cognac, absinthe, and other liqueurs, helps to produce congestion of the epiglottis, and this extends into the larynx. Without doubt the victims of chronic alcoholism, especially when spirit-drinkers, suffer very frequently from chronic laryngitis.

The presence of morbid growths is also asserted to be a cause of this condition, but it might more properly be classed as an effect.

When, however, enlarged bronchial glands or other tumours press upon the recurrent nerve, even to a slight extent, there is frequently laryngeal hyperæmia. It is a question whether this be not due to irritation of the sympathetic interfering with the vaso-motor supply. Patients of the arthritic diathesis, and also those liable to haemorrhoids, and other affections due

to congestion of the portal system, frequently suffer from catarrhal laryngitis.

Occupations which necessitate working in an atmosphere charged with noxious particles are not thought to greatly influence this complaint; they probably predispose to more serious disease.

It is a moot point as to how far an elongated uvula is responsible as a factor in the production of chronic laryngeal inflammation, but it is suggested that the two conditions may be simultaneously or successively produced by one exciting cause. There can be no doubt that chronicity of laryngeal inflammation is frequently due to uvular relaxation.

The disease is essentially one of adult life, and is naturally more frequent in males than in females.

SYMPTOMS : A. FUNCTIONAL. — **Voice** : Chronically hoarse; the amount of dysphonia, however, varies considerably at certain periods of the day, and after functional rest or exertion. Food-taking will often improve it, while under injurious influences it may become aphonic. If the patient sings, the vocal injury will be manifested in loss of range, diminished endurance, and want of control. As the disease advances, all vocal efforts will be obviously strained and laboured.

Respiration is seldom embarrassed, but the respiratory act becomes less complete, so to speak, on account of the fatigue of the glottis. In the act of phonation, therefore, the vocal cords are not set in action by full bellows-power, and breath-taking during speech becomes frequent and gaspy.

Cough is a frequent but by no means constant symptom. It most often occurs on rising in the morning, on change of atmosphere, on use of voice,

or under any circumstances liable to facilitate the dislodgment of mucus in the air-passages.

Pain.—Except in the effort of vocal exertion or after fatigue, this is rarely met with. There is, however, a constant feeling of constriction, or as if there were a foreign body in the air-passages. When the uvula is elongated, direct irritation may play some part in giving rise to this sensation.

B. PHYSICAL.—**Colour:** The hyperæmia of chronic laryngitis is by no means uniform. The congestion of the vocal cords may be unilateral, or may be limited to the cartilaginous portion. In the latter case the vocal process will be seen to stand out as a white prominence: the other portions of the larynx most frequently congested are those to which the mucous membrane is most closely adherent; viz., the epiglottis, the cartilages of Wrisberg and of Santorini, and the ventricular bands; and they are usually affected in the order named.

The capillary vessels of the epiglottis are often seen to be in a state of varicose congestion, similar to that in chronic pharyngitis. A case of this condition affecting the vocal cords and ventricular bands has been described by Morell-Mackenzie, who termed it Phlebectasis laryngea. It is exceedingly rare, and hardly merits the dignity of being considered as a separate disease or variety.*

Form and Texture.—Absence of thickening is a marked characteristic of chronic laryngitis, to which may be added immunity from ulceration.

* Since writing the above the author finds that his views on this question are supported by those of Von Ziemssen, Duchek, and Duncan Gibb.

There is commonly relaxation of the inter-arytenoid fold and of the ventricular bands, and the vocal cords are often seen during phonation to have lost co-ordinative power, and to be spasmodic in action, giving a jerkiness of movement. Chronic infra-glottic inflammation is exceedingly rare. When accompanied by thickening, and leading to stenosis of the infra-glottic space, a syphilitic dyscrasia may be strongly suspected. When an oedematous laryngitis has become chronic, a certain amount of tumefaction sometimes remains.

Very rarely indeed there may be slight erosion at the vocal process (fig. 52); *i.e.* at the situation where friction may be exercised; but such a symptom should be looked on with the greatest suspicion of deeper mischief. The follicles of the larynx are sometimes enlarged and prominent (fig. 53). Some writers then consider the disease as a separate variety,—viz. follicular laryngitis, or glandular laryngitis.

The author's opinion on this point is the same as that enunciated concerning varieties of chronic pharyngitis; namely, that all, being due to one pathological cause, should be considered as variations in degree, and not of kind; but when there is any distinct enlargement of the racemose glands, and especially if there be superadded erosion, however slight, of the vocal cords, the practitioner should search carefully for signs of general phthisis. Comparison of fig. 53 in Plate VI., and of fig. 72 in Plate VIII., will show how enlargement of the glandules may be but a first step towards tuberculous ulceration.

Secretion.—This is almost always excessive in the earlier stages, but may become gradually arrested as

the disease advances; so that the throat is felt and seen to be always dry. The character of the secretion generally is that of a gelatinous accumulation, with viscid, tenacious mucus clinging about and around the laryngeal orifice.

C. MISCELLANEOUS.—External examination gives but negative results, though the surgeon's attention is often drawn by the patient to a supposed swelling. When any glandular enlargement is present, there is strong reason to doubt the simple nature of the complaint. The general health suffers in very varying degree; this variation depending much upon the importance of the loss of voice to the material well-being of the patient, and its consequent effect on his nervous system.

The digestive system is frequently disturbed, causing loss of appetite and dyspepsia. Worry and mental anxiety will often produce sleeplessness, and even emaciation. Careful examination of the lungs should never be omitted in any case of chronic laryngitis, especially when there is persistent swelling of any part of the mucous lining, or when there is ulceration.

PROGNOSIS, COURSE, AND TERMINATION.—Recovery from this disease is always slow, and greatly depends upon the amount of obedience to the practitioner's directions, and the perseverance with which they are carried out.

The great cause of anxiety is the fear of a simple catarrh running into the tubercular form. On this account the prognosis should be guarded, especially if there be the slightest tendency to phthisis in the patient's family. As a rule, with persistence of treatment, these cases do well. When, however, the

catarrhal predisposition is strongly marked, the tendency to relapse is great. This cause will be found to exert an influence on associated enlargement of the cervical or bronchial glands. In cases of goitre there will often be a marked exacerbation on the recurrence of the menstrual flow.

In many instances, however, the baneful cause will have produced so much mischief, that the voice will, in spite of all treatment, remain hoarse. This is the case when the disease is due to chronic alcoholism, and where abuse of the voice has been very exaggerated. Vocalists, if they regain their voice, but too frequently find that the range is diminished, and the tone-quality impaired.

TREATMENT: General.—Constitutional remedies are not of much service, though attention to the digestion, diet, and general powers of the patient, is of decided importance.

In many cases where the mental anxiety has almost gone the length of hypochondriasis, bromide of potassium has been found by the author of the greatest utility. In other cases 5-grain doses of hydrate of chloral two or three times a day have an admirable effect in calming the mind. When there is portal congestion, a natural saline purgative draught each morning is beneficial. In glandular enlargements and goitre, iodide of iron and other suitable remedies must be given, and cod-liver oil will also be indicated where there is any sign of general emaciation.

Local.—Local measures must be directed to favouring resolution. First amongst these are vapour inhalations of a stimulating character. Benzoin with

pine oil, benzole, creasote, and pine oil, or pine oil with camphor, are the best ; the first being the mildest, the others successively stronger in stimulant action (Form. 24, 25, 28, 30, and 31). This list of stimulating inhalations is quite long enough for all practical uses.

Lozenges, whether the pharynx be or be not affected, are also of great benefit, those in Form. 11 and 14 containing together astringents, sialagogues and expectorants, being the best adapted to fulfil the various indications. When pharyngeal disease co-exists, the treatment of such a condition is considered of primary importance, and very many cases of laryngeal congestion will get quite well with but little further treatment when the co-existent disease higher up has been cured.

The use of local astringent solutions is of decided value, especially when there is congestion of the vocal cords, arytenoid cartilages, or inter-arytenoid folds. Such solutions should be of very moderate strength : the most generally serviceable is that of chloride of zinc, 10 to 30 grains to the ounce of water, and the application must, of course, be made by the surgeon himself, with the aid of the laryngeal mirror.

It is worse than useless to allow such a measure to be attempted by any lay friends or relations of the patient.

• Von Ziemssen advises the use of the solid nitrate of silver (!!), and of solutions of that salt to the strength of 240 grains (!) to the ounce of water. In no case of congestion is even a mild solution of the silver salt superior to one of zinc, aluminium, alum, tannin, or iron ; and the spasm exceptionally characteristic as

a result of lunar caustic applications, is highly detrimental in a disease where rest to the organ is an all-important factor in treatment (Form. 45 and 47).

As the congestion subsides, faradization is of great benefit in restoring tone and co-ordinative power.

Externally the application of wet compresses, and the nightly painting with tincture of iodine over the thyroid cartilage, will be found of value.

Hygienic and Dietetic.—Of primary importance is a careful avoidance of all preventable causes of the affection. First and foremost may be mentioned rest to the voice, not only from professional exertion, but in ordinary conversation. In the home circle the patient should be directed to speak always below his breath, even to a whisper; to avoid irregular vocal efforts, as laughing, and, especially never to speak in noisy streets or vehicles.

Lessons in elocution with reference to breath-taking are also all-important. The patient when recovered should be directed to take a full inspiration, to commence to ex-spire only with a spoken word, and to utter at first only one word with each ex-spiratory effort. Gradually he may be allowed to say two or three words on each breath, and so to lengthen his sentences to the ordinary extent. In these lessons nothing is better than the Prayer-book version of the Psalms, pointed as each verse is into four sentences for chanting. These sentences can easily be subdivided and lengthened for the necessary lessons.

All noxious habits of smoking and drinking, exposure to varying temperature, and the continuance of hurtful occupations, are to be interdicted. For those whose occupations compel them to be more or less

exposed to cold or damp atmospheres, the use of the respirator, or one of its efficient substitutes, will be necessary, and will often be found a great help to treatment.

Cold affusions and general tonic measures are useful to many, while in others climatic change to warmer countries will be imperative.

The Turkish bath, from its action on the skin as well as for the local benefit of the inspired hot, dry air, is often of the greatest value in chronic laryngeal inflammation.

The diet must be simple, nutritious, and non-irritant. As a tonic, a fairly generous Burgundy will be found to be more easily digested and more nourishing in its quality than the Port of the preceding generation or the Claret of the present day.

CHAPTER XI.

SYPHILITIC LARYNGITIS.

(Figs. 56 to 67, Plate VII.)

THE mucous membrane of the larynx may exhibit the specific manifestations of this disease in either the secondary or tertiary stages. The great frequency of syphilitic laryngitis is described by Gerhardt as largely influenced by fortuitous catarrhal inflammation, and the experience of all laryngoscopists in hospital practice will confirm this view. Another predisposing cause to the greater amount of advanced syphilitic disease of the larynx in the poor, doubtless exists in the apathy and neglect with which, after long existence, such affections are treated, and also often to a badly nourished state of the body.

SECONDARY SYPHILIS (Figs. 56 and 57, Plate VII.).

The larynx is affected at this period of the disease at any time from six months to two years after exposure to the primary infection. It may occur either as an extension from the pharynx, or, as is more commonly the case, it arises at a somewhat later period, and independently of the pharyngeal manifestation. The truth of this last suggestion is evidenced by the facts that the larynx is often first affected after the disease in the pharynx has been

cured or without the latter ever having suffered, and also that the characteristics of secondary inflammation in the larynx are by no means so differentially distinctive as are those in the fauces.

Secondary syphilis in the pharynx is almost invariably accompanied by cutaneous manifestations, whereas if the latter have ever been noticed, they will often have disappeared months before the larynx is affected.

Mucous deposit also is by no means a natural product of syphilitic inflammation occurring in the larynx, nor is such inflammation or such deposit invariably, or indeed usually, symmetrical. Loss of tissue is rare, ulceration seldom extending beyond erosion of the epithelial layers, which occurs at points likely to be subjected to irritation from the passage of food or from mutual contact.

Condylomata occur in some situations, and they are probably not so uncommon as Morell-Mackenzie (*Reynolds' System of Medicine*) has estimated (4 per cent.): the author's experience would lead him to say about 10 per cent. as the proportion, but possibly he gives a longer limit to the secondary stage of the laryngeal disease.

Contrary also to the same authority, the author has seen not a few cases in which condylomata have developed into formations which were, to all intents and purposes, warty growths, nor can he agree that such formations have in the larynx, any more than on the skin, *at points where irritation is constant*, a tendency to spontaneous subsidence. All secondary syphilitic affections of the larynx are characterized, as are those associated with the same dyscrasia in other

organs, by rapid amelioration under appropriate treatment, but by an equally strong tendency to relapse. This fact is often of great diagnostic value in doubtful cases of chronic laryngitis.

SYMPTOMS: A. FUNCTIONAL.—Voice is characterized by constant and very persistent husky hoarseness. When once heard, the raucous syphilitic voice is so distinctive that the practised ear will recognize the disease as soon as the patient speaks.

Vocal exertion always increases the dysphonia, and the singing voice is entirely destroyed for the time: it is, indeed, doubtful whether a vocalist who has once suffered from syphilitic congestion of the vocal cords ever regains purity of tone; submucous changes, slight though they may be, preventing perfect coaptation and co-ordination of those structures.

Respiration is but seldom embarrassed, but the breathing is frequently described by the patient as wheezy. Extension of the inflammation into the trachea and larger bronchi is common, and on auscultation râles may be often heard.

Cough is only occasioned by the desire to clear away expectoration, or after the irritation caused by talking or eating.

Pain, except a sense of effort in the use of the voice, is rarely experienced.

B. PHYSICAL.—**Colour.**—On looking into the larynx of a patient suffering from secondary syphilis, one is struck first by the somewhat—not always, however, well-defined—mottled discolouration, and, secondly, by the fact that the hyperæmia does not appear to be so superficial, nor so vivid in colour, as in simple chronic inflammation. The distinctive appearance is

more particularly seen on the vocal cords, which are observed to be more or less congested, in patches of varying intensity. Mucous deposits are visible most frequently on the epiglottis and at the posterior commissure.

Form and Texture.—Beyond occasional slight want of equality in muscular action, there is seldom alteration of form. Condylomata are occasionally seen on the inter-arytenoid fold, and on the free edge or lingual surface of the epiglottis. In long-standing cases, and when the voice is unduly exercised, there may be loss of surface-tissue on the arytenoid cartilages and on the vocal processes. It is comparatively rarely that any other part of the vocal cords is eroded.

Secretion, in secondary syphilis, is scanty and viscid, the patient frequently making a point of complaint that the cough is very dry.

C. MISCELLANEOUS.—External signs of syphilis on the skin are often wanting, for the reasons already given, and, when the pharynx has not been attacked, they may have been so slight as to have entirely escaped the notice of the patient. The most uniform corroborative symptom is that of post-cervical glandular enlargement, but that cannot be said to be by any means universal. In fact, the surgeon will often be at a loss to arrive at a distinct conclusion as to the nature of the disease from the usual commemorative signs, especially in the case of those patients (married women, for example) of whom it is unadvisable, for ethical and family reasons, to ask questions. In such cases, reliance must be mainly placed on the results of physical investigation of the larynx itself.

The general health is of course tainted by the specific poison, but it does not suffer to the same extent as in the earlier or in the much later epochs of the disease. Thus there is seldom much variation in temperature, though there may be slight fever at night; the surface temperature may be ordinarily rather increased, and the perspiration somewhat scanty. All the symptoms suffer some nocturnal exacerbation.

PROGNOSIS.—The course of the disease under treatment is favourable, though, as intimated above, the chances of a permanent loss of singing voice or of a chronic hoarseness are not to be overlooked, nor the possibility of the development of quasi-new formations.

There is a strong disposition to relapse on the slightest catarrhal provocation, and this tendency is naturally somewhat increased during the time the patient is under active treatment.

TREATMENT: General.—A mild mercurial course is naturally indicated, and is most serviceable. The Turkish bath, followed by the calomel vapour-bath or by moderate mercurial inunction, is of great value, both for its general and local effects.

Whenever condylomata appear, or when there is any symptom of ulceration, iodide of potassium, with or without mercury, is indicated.

Local.—Stimulating inhalations, of precisely the same character as were recommended in simple chronic laryngitis, are of the first importance. External applications of tincture of iodine, or mercurial ointment with iodine or belladonna, have a decided local beneficial effect.

Topical applications to the larynx are of even

greater value than in simple chronic congestion, and must be pursued with proportionately greater regularity and perseverance, even after the inflammation has disappeared from the vocal cords. Allusion has already been made to the absence of warrant for the traditional preference of the profession for nitrate of silver in laryngeal disease. This remedy should only be applied when there is actual ulceration. Solutions of chloride of zinc and of sulphate of copper are most useful as local applications in secondary inflammations; alternation of the solutions frequently having a great effect in promoting the cure. In very obstinate cases, spa treatment at Aix-la-Chapelle or Bagnères de Luchon may with advantage be prescribed.

Hygienic and Dietetic.—The indications are to give rest to the voice, and to avoid exposure to all catarrhal or irritative influences of atmosphere and nourishment.

TERCIARY SYPHILIS.

(Figs. 58 to 67, Plate VII.)

This form of syphilis is characterized by ulceration of the most destructive character, causing permanent loss of tissue, followed by resulting cicatrices, which may either produce great narrowing of the larynx, or may be accompanied by new deposit having the same effect.

It occurs in the throat as one of the latest manifestations of the disease, and is often seen twenty or thirty years, or even at a still later period, after the primary infection. It may commence as an extension of the disease from the fauces, in which case it very seldom indeed advances beyond the epiglottis, and

under these circumstances there is neither much thickening nor displacement, nor any great amount of trouble in the performance of function.

From the velum, or posterior wall of the pharynx, the disease very seldom descends into the larynx, and cases may frequently be seen in which the whole posterior wall of the pharynx is the seat of deep ulceration, extending upwards into the naso-pharynx, but in which the larynx is absolutely free from any sign of ulceration, and in which, although articulation is affected, the tone-quality of the voice is unaltered. Such was the condition in the case, the naso-pharyngeal appearance of which is depicted in fig. 39, Plate V.

These remarks hold good also with respect to congenital syphilis, which it is not common to find in the larynx. The author, however, remembers a case, seen some years ago, in which it appeared possible to believe that the patient, a young man of 22 or 23, was the subject both of hereditary syphilis and of the same disease in the acquired form. His father was under treatment for tertiary laryngeal manifestations; the younger man, having characteristic teeth and physiognomy, and with cloudy corneæ, had been under medical care for palatal ulceration, acknowledged to the primary infection, had the scar of a chancre, and some years after his first appearance as a patient suffered from syphilitic invasion of the larynx.

It is not easy to affirm that the ulcerative process is always the result of degeneration of gummatous deposit, since the patient frequently does not come under observation until loss of tissue has already taken place; but from the appearance of those ulcers which

are the undoubted sequel of gummata, it seems probable that such is the usual origin of laryngeal tertiary ulceration.

The Epiglottis, subjected as it is to greater irritation than any other part of the larynx, is the portion most frequently attacked; but it cannot be said that any one other part is more prone than the rest to the destructive process.

SYMPTOMS: A. FUNCTIONAL.—**Voice.**—This is frequently not at all, or but very slightly, affected when the epiglottis only is attacked, and is quite restored when the disease, limited to that valve, is healed.

Usually, however, permanent hoarseness, and even aphonia, is a prominent symptom.

Respiration may not be affected even when there is considerable active ulceration, but on cicatrization embarrassment of respiration is a most frequent as it is a most alarming symptom.

Difficulty of breathing may also be due to actual narrowing of the glottic space by the formation of cicatricial adhesions and new growths; it may further depend upon infra-glottic stenosis of the same character, or upon constriction of the trachea just above the bifurcation, that being the most common seat of tracheal stricture.

Another cause of dyspnoea is a mechanical one, and arises from fixation of one or other arytenoid cartilage, due to fibrous deposit around the articulation. Two such cases have been recently under the author's observation. In such a case the vocal cord of the affected side will be seen to be paralyzed, as if from pressure on the recurrent nerve; the respiration, however, will be less impeded, and there will not be

the paroxysmal exacerbations so characteristic of nerve-pressure.

Attacks of dyspncea will, of course, vary in character according to their cause.

When due to stenosis, there will be stridor on exertion, and on the occurrence of quite slight catarrh, alarming attacks, which partake of all the characteristics of an asthma.

The patient may recover from one of these attacks, and enjoy comparative immunity from recurrence, but the intervals of remission become gradually shorter until at length they become so frequent and persistent that life is threatened by exhaustion, by laryngeal or tracheal spasm, or by asphyxia.

Cough.—In the ordinary course of active tertiary inflammation there is nothing to call for special remark in this symptom, except that the expectoration is of a distinctly muco-purulent character, and often contains portions of disorganized tissue; in which case there may be more or less haemorrhage. Portions of the tracheal rings, or of the laryngeal cartilages, or even a whole arytenoid cartilage, may be expectorated.

When the air-passages are narrowed, the cough partakes of the characteristics of the advanced stage of oedematous laryngitis with stridulous inspiration, intense spasm, and a varying degree of aphonia. When there is constriction of the trachea, the sound of the cough cannot be mistaken; it resembles more than anything that of laryngismus stridulus, or of whooping-cough; but the high note caused by obstruction to the ex-spired air is changed by proceeding from lower down in the windpipe.

The expectoration in these cases is of the scanty,

glairy character seen in asthma, and, as in that disease, relief is not experienced until the secretion imprisoned at the constricted spot is liberated.

Deglutition.—This is naturally impeded when the epiglottis is attacked, though it is surprising how much of that valve may be lost without interfering with the act of swallowing, provided the pharynx be not also involved.

Dysphagia is much more frequently experienced when the pharyngeal border of the posterior wall of the larynx is actually diseased.

After-thickening of the epiglottis, provided its hinge-movement is free, does not appear to affect deglutition.

Odynphagia is rare, and the same may be said with regard to pain generally, unless there be perichondrial inflammation; and, indeed, this absence of pain has come to be regarded as a differential symptom of importance.

B. PHYSICAL.—**Colour.**—The natural colour of the general surface of the larynx is markedly increased in intensity. After the ulceration has healed, the laryngeal mucous membrane loses its original delicate semi-transparent hue, and is seen to be of an opaque dullish red. Sometimes this redness is modified by a blue-greyness of tone. It will be noticed, for example, that the normal warm buff colour of the epiglottis is lost, and that this part will look as if of exactly the same structure as the arytenoid cartilage. The ary-epiglottic folds will appear as solid as the ventricular bands, and the vocal cords will be so changed in appearance as to have lost all their pearly lustre. Sometimes in the stage of acute inflam-

mation they will appear to have quite degenerated from their fibrous firmness, and to have the consistence and colour of an active granulation. When the disease has become very chronic, that is to say, where a long interval has elapsed since the last inflammatory attack, the whole surface of the larynx often acquires a greyish or yellowish appearance from submucous changes.

Gummata in the larynx have been described by Mandl as having a greyish-yellow tint, but by Türck and others, as being of the same colour as the normal mucous membrane.

As seen by the author, they have generally exhibited decidedly increased vascularity when occurring on the ventricular bands, inter-arytenoid fold, and arytenoid cartilages; when on the epiglottis, they appear as nodes of a somewhat paler colour than the congested surface from which they spring.

Form and Texture.—The order of appearances under this head will be thus:—loss of tissue, thickening, cicatricial narrowing.

When there is loss of tissue, the characteristic of the tertiary syphilitic ulcer in the larynx is nothing less than typical, and cannot be better described than in the words of Türck, as having “a more or less circular form, a deep floor, covered with a whitish-yellow coating, sharp, sometimes strongly elevated margins, surrounded by an inflammatory areola.” It need only be added that the margin is hardly circular, but appears of a multiple crescentic form; in this respect somewhat resembling the manner in which the mucous patches appear on the pharynx in the secondary stage. A comparison of the Plates III.

and VII. will at once illustrate and elucidate this point.

When the edge of the epiglottis is ulcerated, it is eaten out in distinct notches with clean edges, and the disease will proceed, by the way of the ary-epiglottic folds, to extend to the rest of the larynx.

The secretion of the ulcers is not at first very profuse, and is then pale in colour and of creamy consistence; but when the cartilages become attacked, there is free purulent discharge, having the characteristic odour indicative of caries.

The thickening of tertiary syphilis is as characteristic as the ulceration which precedes it; occurring, as it does, as a sequel of ulceration instead of being a forerunner of that process, as in phthisis, and being of the nature of excessive activity of growth at the periphery of the ulcer, with marked lack of productiveness at the centre (Virchow).

Cicatricial narrowing of the larynx is attended, as we have seen to be the case in oedematous swelling of the same region, with the greatest danger to life, and for somewhat similar reasons; viz., not only because there is narrowing of the air-passages, but also because there is very frequently a superadded impediment to the free action of the vocal cords.

Position, or the relative situation of the various parts of the larynx, may be greatly altered by cicatricial deformities. Outgrowths from the pharyngeal wall not uncommonly advance across the laryngeal opening, but they seldom exercise compression.

C. MISCELLANEOUS.—There is seldom any external local swelling of the larynx, except in occasional cases of perichondritis of a specific character. The con-

stitutional symptoms need not be dwelt upon, except to say that the absence of cachexia, so frequently to be noted, is of marked diagnostic value in differentiating this affection from phthisis and cancer.

PROGNOSIS.—This must always be guarded in a case of tertiary disease of the larynx, if there is the least evidence either of perichondritis or of stenosis, and especially if, in the former case, the cricoid cartilage is attacked. Death may result from acute œdema of the larynx, occurring suddenly during the active ulcerative process. Another possibility of fatal termination, fortunately not a common one, is that of haemorrhage.

If, however, the disease come sufficiently early under the notice of the surgeon, a very favourable opinion may be given, both with reference to life and to modified restoration of functions. Ulcerations of the epiglottis, of the arytenoid cartilages, and even of the vocal cords, will heal with marvellous rapidity, and the worst result to be anticipated is some slight loss of comfort in deglutition, or a permanently hoarse voice.

TREATMENT: General.—During the active stage of ulceration, the administration of the iodides of potassium or sodium is in the highest degree beneficial. Seeing, also, that the majority of the worst cases occur in very poorly-fed persons, cod-liver oil and iodide of iron are of great therapeutic value. In other cases, the iodide may be occasionally remitted and cinchona with ammonia, or acid, substituted. When the ulcerations are healed, the preparations of mercury must be given for a lengthened period, as prophylactic against future attacks (Form. 58, 55, 56, 67, and 68).

Local.—There is no better topical remedy for syphi-

litic ulcers than nitrate of silver, which must be applied *daily* with the aid of the laryngoscope. If there is much coating of secretion over the ulcer, it should be first removed by means of a soft moist brush, or a piece of cotton-wool in a suitable holder.

When the ulceration is of the epiglottis, the galvanocautery acts more rapidly in arresting the destructive process than even nitrate of silver.

Laryngeal oedema must be met by the prompt performance of tracheotomy, and the same step may be necessary, at least as preliminary to later measures, if stenosis becomes extreme.

With respect to the further treatment of this last condition, it cannot be said that any great success has, so far, followed attempts to remove the cicatricial web, or to dilate the narrowed orifice, by bougies or analogous measures carried on through the natural passage.

It is better, therefore, to warn the patient on whom tracheotomy has been necessary on account of such a condition, that he will in all probability be obliged to retain the canula for the rest of his life.

The tube should always be inserted in the lowest point possible in the trachea, and should on no account be removed, however favourable the symptoms may appear, unless laryngoscopic examination give evidence that the physical obstruction is lessened.

At a very early period after tracheotomy it will be well to make an opening in the superior surface of the canula, and to allow the patient to wear a pea-valve, so as to favour a natural process of dilatation by means of the current of air. Much might be done by the cicatricial narrowing of the glottic space by splitting

and dilatation of the stricture from below, through the opening made by the operation of tracheotomy, and such a measure, first practised by Schroetter, would appear to offer much more hope, and would certainly be better borne, than similar treatment through the upper laryngeal opening. In the majority of cases, however, the operation of tracheotomy is alone sufficient to place the patient in a state of comfort as well as of safety.

With reference to other operative procedures, the author would not recommend, at any rate for this disease, either resection of the larynx, as practised by Heine, or excision of the entire vocal organ, as performed by the same surgeon and by Billroth and others for malignant affections.

CHAPTER XII.

TUBERCULAR LARYNGITIS.—LARYNGEAL PHTHISIS.—THROAT CONSUMPTION (Figs. 68 to 76, Plate VIII.).

THAT evidence of the tubercular diathesis influences a local laryngeal inflammation in a manner eminently characteristic, and at a period long prior to the discovery of equally well-marked symptoms in the lungs, is a fact which the daily observation of those engaged in laryngeal practice establishes as incontrovertible.

Whether or not there be tubercle actually developed in the larynx, or what indeed is the nature of tubercle wherever developed, the author does not presume, and indeed does not care, to decide. Seeing, however, that tuberculosis is a disease primarily manifesting itself more especially in the respiratory organs; seeing that catarrh is one of the most frequent excitants to that disease, and that many catarrhal inflammations of the lungs commence in the larynx, it is at least fair to infer that, in those cases in which the eye reveals what has come to be recognized as tuberculous laryngitis before the ear detects the presence of tubercle in the lungs, the disease has primarily attacked the former organ. Not only so, but noting also that the morbid changes in the larynx, as physically evidenced in every stage, are quite different from those of simple catarrhal,

and of syphilitic, to say nothing of exanthematous and other phlegmonous inflammations, it is not unreasonable to suggest that the factors are also of an equally distinctive character.

It is quite certain that the pale, opaque tumefaction of the arytenoid cartilages and of the epiglottis in laryngeal phthisis, has not the clear transparency of serous œdema, the active glandular inflammation of simple laryngitis, the hyperplastic infiltration of syphilis, or the angry inflammatory irritation of carcinoma. Nor is the consequent ulcerative process less distinctive; there is not erosion, nor deep excavated circumscribed ulcers, followed by narrowing cicatrices; nor new formations taking on an ulcerative process, but a true carious degeneration, causing loss of tissue, which, commencing superficially at small points, leads to universal destruction of the deeper parts, without extension to neighbouring glands, and with but feeble, if any, attempt, under treatment, at a reparative process.

It is, therefore, surprising that we should be told, with reference to laryngeal phthisis, on the one hand, that "tubercl^e appears to play a very secondary part, if any part at all," in its production (Mackenzie); and on the other, "that neither the catarrh nor the ulceration of phthisical subjects presents any characteristic signs by which it could be recognized as such, [and that] the attempts made to establish pathognomonic peculiarities cannot be said to have succeeded" (Von Ziemssen).

We prefer to adopt the view of Virchow, who just exactly recommends the larynx as the most appropriate place for the study of true tubercle.

ETIOLOGY.—The predisposing causes are, of course, those which are found to obtain in the production of tubercle generally; those exposed to catarrhal influences being more liable to have the larynx primarily attacked; while experience does not seem to prove that functional activity is a strong predisponent. On the other hand, debility of the general system, especially if resulting from amenorrhœa or other uterine disturbance, which leads to the production of the so-called functional or nervous aphonia, is a not uncommon premonitor of throat consumption. In such a case there will appear no disease in the larynx beyond a loss of adductive power in the vocal cords, and some paleness of the mucous membrane, explained by the general condition; and the lungs, although insufficiently expanded, and of somewhat diminished resonance, may be pronounced free from disease. Local treatment of the larynx by stimulating inhalations and by faradization may restore the voice, which is, however, soon lost again. Tonics, change of air and of scene, are of no avail, and at a period varying from a few months to perhaps a couple of years, undoubted phthisical symptoms develop themselves.

Dr. Sawyer, of Birmingham, in an admirable clinical lecture on phthisical laryngitis (*Lancet*, Jan. 30th, 1875), has done well in dividing the changes of this disease into four stages: 1. The stage of anæmia. 2. That of tumefaction. 3. That of ulceration. 4. That in which necrosis or caries of the cartilages may arise; and this division will be here adopted.

In enumerating the signs of laryngeal phthisis, it has been thought well to consider them independently

of concurrent or pre-existent lung mischief; but, of course, in those cases in which pulmonary disease is advanced before there is any evidence of laryngeal complication, the character of the throat symptoms may be considerably modified.

SYMPTOMS: A. **FUNCTIONAL.**—**Voice.**—Failure of the voice is a very early symptom. As just remarked, this may be due either to local lesion or to insufficient motor power of diseased lungs; it may be quite early aphonic; more commonly, however, it is affected just in proportion to the amount of the local lesion; and the ordinary vocal symptoms of congestion, thickening or ulceration, already described at length when considering other forms of laryngitis, are witnessed.

There is, however, a peculiarity in the voice of consumptives with laryngeal mischief not generally noticed: this is found in the rapidity with which the voice changes in character during a quite short conversation, from a gruff hoarseness to a high falsetto, which as quickly passes into a toneless whisper. These changes are probably influenced by lodgment and dislodgment of secretion, and also by nerve-irritation. A somewhat similar, though to the practised ear distinct condition, is sometimes noticed in patients with laryngeal growths, variation in situation of which produces quick alterations in voice.

Respiration, although short, is not, as a rule, embarrassed in the early stage, but as tumefaction leads to mechanical loss of mobility, and the vocal cords themselves become thickened and ulcerated, extreme dyspnoea, with stridor and paroxysmal aggravations, may ensue.

Cough is naturally a prominent and, on many accounts, a very distressing symptom in the advanced stages, whether it be due to local or to pulmonary causes, since the mechanical irritation in the larynx produces most acute pain, and the cough paroxysms are followed by extreme prostration. At a very early period the feeling of a desire to clear the throat of a foreign body, predisposes to a worrying, unproductive cough. Expectoration is not copious, nor more than glairy in character, until suppuration is established. Hæmorrhages from the larynx are but rare, even when there is advanced necrosis, and it is very difficult, even when suspected, to decide that the bleeding has originated in that region. Occasionally, however, the spot at which the vessel has given way can be seen. In one instance (*vide* fig. 69, Plate VIII.), a recent clot was observed on the vocal cord after a very moderate hæmoptysis, in which there was but slight corroborative local evidence of laryngeal tuberculosis, nor would the result of stethoscopic examination have been sufficient to justify the grave prognosis suggested by the laryngeal appearance, and, unfortunately, verified by the subsequent history of the case.

Deglutition.—Difficulty of swallowing is by no means an invariable accompaniment of laryngeal phthisis, but when present it is, without doubt, the symptom which most tends to hurry on the fatal termination, and is the one on which account patients most frequently seek relief of the throat specialist. The trouble is partly mechanical, from impediment to the mobility of the epiglottis, which causes fluids to pass downwards into the larynx, and backwards into the naso-pharynx. Dysphagia is first experienced only in taking fluids,

but as soon as there is ulceration, attempts at the deglutition of solids, unless first artificially masticated and made bland, cause the act to be acutely painful.

This symptom of Pain during the exercise of function is of great diagnostic value when there is the least idea that the disease may be syphilitic. When, however, the parts can be kept at rest from cough, or when the patient is not eating, it is surprising how little local pain is felt; here, again, differentiating this disease from carcinoma.

B. PHYSICAL.—**Colour.**—The first physical evidence of the laryngeal disease is a paleness of the mucous membrane; and it is something more than an anæmia, for while all parts of the larynx, naturally pink, will assume a muddy and greyish hue, the vocal cords will often be found congested, and many engorged capillary vessels will be seen ramifying on that portion of the mucous membrane considered anæmic. As the stage of tumefaction arrives, the colour, while it does not become less pale, is decidedly more opaque, except on the epiglottis, which, as it becomes thickened, loses its natural buff hue, and assumes a pale rosy tint.

Ulceration, except on the epiglottis and vocal cords, is not preceded by hyperæmia, but when the ulcers are formed there is often a faint red line at their circumference. The surface of the vocal cords, where loss of tissue has taken place, is frequently of a greyish-white or pale yellow colour, while the rest of the cord is congested. The ulceration of the vocal cord is seldom deep; but cases have been reported in which it has extended to the arytenoid cartilage, leading to caries and extrusion.

Form and Texture.—Thickening caused by infiltration

tion of the submucous tissue characterizes the second stage of laryngeal phthisis. The part first affected may be one or both vocal cords; but much more commonly the first symptom is evidence of deposit in the inter-arytenoid space. Then the well-known and often-described swelling of the arytenoid cartilages is seen, giving rise to the appearance of two pear-shaped bodies, the larger ends of which meet in the centre line, and consist of the swollen and no longer distinguishable cartilages of Wrisberg and of Santorini, tapering off more or less in proportion to the swelling of the ary-epiglottic folds until they join the epiglottis (figs. 71 and 74, Plate VIII.).

Equally unrecognizable is the condition of the last-named part, which becomes so misshapen, that no longer is its free edge, superior or inferior surface, or any ligamentous fold, to be distinguished, the whole being swollen into a horse-shoe or turban-like shape, which lies nearly horizontally at the base of the tongue, or is so flexed on itself as to resemble a lateral view of the index finger in a similar position (fig. 74, Plate VIII.).

Some allusion has been made to the character of the ulcerations: their peculiarity is their worm-eaten, carious appearance, showing that degeneration has not commenced at the surface, but in the deeper tissues, or rather, as is probably the case, that the secretion of the racemose glands has undergone degeneration; the glands have swollen and have given way at the point most favourable for exit of the retained matter, namely, at the surface. These small ulcers then unite by breaking down of intervening tissue, and so form large ulcerating surfaces (figs. 73 and 75,

Plate VIII.). Narrowing of the glottis is often the result of tissue-changes, but there is never any attempt at cicatrization. Paralysis of one or both vocal cords is frequently seen, and may be due either to mechanical impediment or to nerve-pressure (fig. 75, Plate VIII.).

Mandl and others have drawn attention to the fact, illustrated in the figure referred to, that, contrary to experience in other paralyses of the recurrent laryngeal nerve, the right nerve is much more frequently pressed upon than the left in cases of laryngeal phthisis. This is explained by the anatomical relation of the right nerve to the apex of the lung.

Secretion.—As mentioned when treating of the sputa under Cough, the secretion is altered in character from a glairy, viscid exudation of moderate amount to a copious muco-purulent discharge.

Whenever there is actual chondrial caries, the odour is very characteristic, though foetor of the discharge may be also due to pulmonary causes.

If doubt exists as to the diagnosis, the secretion may be examined by the method proposed by Dr. Fenwick, of boiling with a solution of potash, to destroy the mucous elements, and submitting the deposit to microscopic investigation. In such a case elastic lung tissue will often be seen at a period prior to the existence of well-marked auscultatory signs.

C. MISCELLANEOUS.—There can be no reason for entering largely into these symptoms, except to remark that increased frequency of the pulse and range of body-temperature, as well as evidence of mal-assimilation, giving rise to dyspepsia and loss of weight, are

of as great importance in the early stages of laryngeal as of general phthisis. With reference to the state of the lungs, early and frequently-repeated auscultations should be made. At first there may be nothing more than slightly diminished resonance, hardly perceptible increase of vocal fremitus, and prolongation of expiratory murmur; but gradually and surely the chest-evidences will become more strongly marked. It must be remembered that though tubercular disease may be first detected in the larynx, no case has yet been reported in which a patient has died of that disease without well-marked symptoms in life, and appearance after death, of pulmonic disintegration.

TREATMENT: General.—This need scarcely be here entered upon at any length, as it must differ in no essential respect from that necessary for phthisis and tuberculosis generally, however and wherever manifested.

The indications for general treatment in regard to the local trouble are to diminish the cough, so as to give as complete functional rest as possible, and also to endeavour by internal remedies to relieve the irritability of the upper portion of the gullet. For this latter purpose bismuth and bromide of potassium, taken shortly before food, will often be found of great service.

The hypophosphites of soda and lime in doses of five grains of each salt, have certainly acted well in the author's practice, in those cases in which the evidence of the disease was primarily in the larynx, by checking night perspirations, diminishing cough, aiding digestion, and arresting loss of tissue.

Local.—In respect to local treatment, it is gratifying to know that many authorities eminent in the general treatment of phthisis,—Dr. C. J. B. Williams, for example,—speak in high terms of the relief that may be given by local measures when the disease attacks the larynx; and yet many general physicians do not quite fully acknowledge how much success depends on careful attention to detail.

A proper inhaler, generating steam at a temperature accurately registered according to the special circumstances of the patient and the time of the year, so that while moist, warm air is inhaled, and the volatile ingredient thrown off, the respiratory muscles are not fatigued nor the circulation quickened, is surely better than a jug of hot water with a napkin lying over the patient's face and covering the jug; and it is not surprising if in the latter instance there is a strong liability to induce perspiration. Again, when remedies are applied they are often worse than useless, unless the mirror guide the hand, and the application be made to the part affected, and to that only.

Of inhalations—in the anæmic stage, and when the thickening is only commencing, stimulating volatile ingredients, as creasote, the oil of pine, and some essential oils, in water at a temperature of 130° to 150° Fahr., are of service; but when cough, distress of breathing, and dysphagia, due to narrowing of the larynx, ulceration of the cords, or of the epiglottis, occur, all inhalations must be of the most soothing nature.

Plain steam of water, at from 120° to 135° Fahr., compound tincture of benzoin, one fluid drachm to a pint of water, with or without from three to five

drops of chloroform, for each inhalation, conium, or hop, are to be recommended (Form. 22, 23, 27, and 29).

With respect to the last-named remedy, it should be remembered that the oil of hop is very stimulating, not to say irritating; while the extract, with a little carbonate of soda, as used with the extract of conium, or a fresh infusion, is most soothing.

Spray inhalations are of but little use in laryngeal phthisis; they, as a rule, involve great fatigue, and are peculiarly irritating to the mucous membrane, which in this disease is more than usually sensitive. The use of iodine in the form of inhalation is also to be deprecated, on account of its powerfully irritant properties.

Scarification is of most doubtful propriety in this disease: the wounds would invariably ulcerate, and the operation would certainly, looking at the very solid nature of the thickening, give but a minimum of relief.

Still greater local benefit may be found in the use of the brush than by inhaling; and here again it is encouraging to find Dr. Williams agreeing in condemnation of nitrate of silver. The most comforting solution is that of chloride of zinc, 10 to 20 grains to an ounce of water, with, perhaps, a little glycerine. Oil is unadvisable, as preventing the absorption of the substance employed, and pure undiluted glycerine has the property rather of irritating than of soothing. This latter fact is worthy of note here, although it has been mentioned before, as practitioners largely employ the glycerine of tannin of the Pharmacopœia; and they would find it very much more serviceable if diluted with at least an equal quantity of water.

Bismuth, gum, and morphia is an application of much value for relieving the irritation of swallowing, and it may be administered in powder by insufflation, forming an exception to the general condemnation of this method of administering remedies, though it will be preferable, even in this case, for the practitioner to apply it in the semi-liquid form with the brush.

Lozenges containing morphia or opium are of the greatest value in relieving the cough, but it must be remembered, in regard to them, how small an amount of opium taken in a lozenge, or of morphia frequently repeated, will have the desired effect (Form. 16 and 19).

All food should be of the blandest character, and should be taken at a most moderate temperature. It will often be prevented from "going the wrong way" if the patient be directed to thicken his drink, and to gulp instead of sipping it. The raw egg previously mentioned will be found both agreeable and nutritious in this disease.

The operation of tracheotomy was not unfrequently performed, in pre-laryngoscopic times, on patients who were the subjects of laryngeal phthisis. For this there was the excuse of ignorance of the actual local condition; but the same measure has been adopted even by practitioners who, using the laryngoscope, should have been aware of the futility of such a procedure. It should be borne in mind that in this disease the whole mucous membrane is most sensitive to irritation, and is strongly disposed to ulceration; and that the cartilages of the larynx and trachea are, if not actually degenerated, most prone, with the least aggravation, to caries. It is therefore extremely doubtful

whether presence of a tracheotomy tube does not, in such a case, actually increase the embarrassment of both respiration and deglutition. At the most, it can but prolong life a few days or weeks, with but little, if any, amelioration of distressing symptoms. It therefore behoves the surgeon, when such a question arises, to thoroughly explain these facts to the patient, or to his nearest relatives, and to refrain from urging, or even recommending, operative measures, unless under most exceptional circumstances.

CHAPTER XIII.

DEGENERATIONS OF THE LARYNGEAL CARTILAGES.

(Figs. 77, 78, 79, Plate VIII.)

ETIOLOGY.—We have already seen that in both syphilitic and tuberculous disease of the larynx, and as we shall find also in carcinoma, ulceration may extend to the perichondrium, and may lead to death and dislodgment of a portion or even the whole of a cartilage.

The cartilages of the larynx may, however, undergo degeneration quite independently of any of the dyscrasias just mentioned ; and these changes may be brought about in three ways : 1. by ossification, proceeding to actual primary disease of the cartilage ; 2. by fibroid degeneration of the cartilage ; and 3. by disease commencing in the perichondrium. The first affection is one of old age, and may or may not be accompanied by deposits around the articulations ; the second also occurs generally at an advanced period of life, though the author has had one case of this disease in quite a young girl ("Transactions of the Pathological Society," vol. xxvii.); and the third is due to traumatic causes, or is the result of the phlegmonous inflammation complicating typhus, erysipelas, &c. Of the exciting causes to the

first condition must be named, as almost invariably present, the dathous influence, locally manifested. The second, which is rare, is probably due to strumous causes. Traumatic perichondritis is by no means so rare as is generally supposed, and is not a very infrequent result of intra-laryngeal operations for the removal of growths (*vide* next chapter). Von Ziems-sen has also alluded, as a by no means rare cause of cricoid perichondritis, to "the frequent introduction of the œsophageal sound in persons whose cricoid bone is ossified." Traumatic disease is generally confined to this cartilage and to the arytenoids; the thyroid is liable only to the other degenerative processes.

The author has never seen primary perichondritis of the epiglottis, though such a disease has been described: it must in any case be extremely rare. In fig. 78, Plate VIII., is delineated what was believed to be gouty deposit in, or calcareous degeneration of, a portion of the epiglottis, and there were symptoms of gouty perichondritis around the right crico-arytenoid articulation. The patient was, however, only seen twice, and the after-history could not be ascertained.

SYMPOTMS.—It is hardly possible to follow the order observed throughout this work in the consideration of this disease, since in its chronic form it is so insidious that both functional and physical signs undergo very gradual progressive changes. The first symptom is generally one of localized pain, often ascribed to neuralgia; but careful external examination will generally detect a slight unevenness at the painful spot, and the part will be distinctly tender to touch; concurrently, or soon following, the patient will complain of slight difficulty in swallowing, of a feeling of stiffness and of

a slight catch in the breath, which will also be short on the least exertion. At the same time the voice will be noticed to be hoarse, possibly rather high-pitched, and cough will become stridulous, and somewhat paroxysmal. With all this the patient will not perceptibly emaciate, as in cancer; he will continue to take exercise, or even to follow his vocation; and this condition may not vary, or the symptoms only become slightly aggravated, for many months.

On laryngoscopic examination at this stage, physical changes will be by no means well marked. If the disease affect the thyroid or the arytenoid cartilage, or the crico-arytenoid articulation, more or less tumefaction (often almost inappreciable in amount), with hyperæmia, will be noticed, with some impairment in the action of the vocal cord of the affected side (fig. 78, Plate VIII.). If the cricoid cartilage be diseased, the tumefaction, being situated beneath the vocal cords, may sometimes be unnoticed (fig. 79, Plate VIII.). This is especially the case if one side instead of the plate of the cartilage be first attacked (a very rare circumstance), instead of, as is usual, one of its plates, or if the disease commence in the perichondrial layer adjoining the oesophageal wall. It is equally clear that, under certain conditions of this cartilage, the action of the vocal cords may not be greatly impaired, and occurring, as the disease does, in old people, slight muscular palsy may not give rise to any apprehension. In the case of any patient coming with a history such as has been just sketched, the greatest attention must be given to commemorative signs; for there is almost always a very distinct personal history of gouty attacks in other portions of the

body, with evidence of deposit in one or more joints of the extremities.

The author has at present a case under his care in which slight dysphagia is the prominent symptom. The patient is a lady aged 62, and the opinion has been given that she is the subject of malignant stricture: she has recently had an attack of gouty inflammation of the eye; she has chalky deposit in the distal phalangeal articulation of each little finger and in the auricular cartilages, and local manifestations in the larynx are gradually giving evidence of undoubted perichondrial change (fig. 79, Plate VIII.).

The comparatively passive early stage passes gradually into one of greater gravity; the urgency being caused by formation of an encysted abscess around the diseased cartilage, which in its growth greatly aggravates all the symptoms, and may lead to extreme stenosis of either gullet or larynx. This abscess may burst, and portions of necrosed cartilage be discharged from it.

PROGNOSIS, COURSE, AND TERMINATION.—Perichondrial inflammation and degeneration of cartilage must always be viewed with real alarm as to the result to life. Cases (non-specific) have occurred, however, in which the arytenoid cartilages have been discharged and the patient has recovered; and such a result has even been reported after extrusion of the plate of the cricoid.

If the abscess burst during life, it may open into the œsophagus, or into the larynx, or there may be a fistulous communication between these two passages; or, if the disease be anterior, there may be an external fistulous passage leading to subcutaneous emphysema.

Death usually terminates by exhaustion, from the suppurative discharge and consequent irritative fever, or it may take place even before the abscess is opened.

TREATMENT.—There is probably no measure which can prevent or arrest perichondrial changes when once established, and all the surgeon can do is by every care to perfect his diagnosis, and to watch attentively for signs of suppuration. He should then, if possible, open the abscess, having first, unless it can be reached from without, performed tracheotomy. On no account should the idea of laryngotomy or laryngo-tracheotomy, advised by some authors, be entertained; indeed, it is very doubtful whether this operation should ever be performed except for quite temporary purposes. In all cases in which a tube has to be worn for any length of time, the further it is from the laryngeal cartilages, the greater the chance of the patient living more than twelve months after the operation, which is about the average extension of life usually gained by this means when performed for chronic laryngeal disease.

Where there is stricture of the œsophagus, feeding by the œsophageal tube may be employed; the irritation, however, of such an instrument is but too apt to increase the evil, and this method of nourishment should be reserved for those cases in which there is fistulous communication between the larynx and œsophagus.

There are few cases in which raw-egg feeding could not be pursued, to which may be superadded one daily nutrient enema per rectum.

CHAPTER XIV.

BENIGN NEOPLASMS IN THE LARYNX.

(Figs. 80 to 87, Plate IX.)

NO throat affection has received such an amount of attention since the introduction of the laryngoscope as has been devoted to new formations in the laryngeal cavity, and the remark of Von Ziemssen, that "the literature of the laryngoscopic period abounds in recorded observations to a degree almost oppressive," may be applied especially to this department of laryngology. The reader who would wish for the fullest information as to the origin, pathological varieties, and almost individually various treatment of these affections may be referred to the works of Czermak (1863), Türck (1866), Von Bruns (1868), Gibb (1869), Mackenzie (1871), Mandl (1872), and numerous others, down to Fauvel, who in 1876 published a volume of nearly 1,000 pages, fully half of which is occupied by a detailed account of 300 cases of growth under his own care. The practitioner, therefore, need not be at a loss for information on the subject, and it will indeed be strange if he does not find somewhere recounted the analogue of any case which may come under his observation, though he will be somewhat perplexed by the different lines of treatment he is recommended to adopt by the various

authors, and the variety of instruments he will be advised to purchase.

The consideration of this interesting, though decidedly rare form of disease, will in the present work, therefore, be limited to a few practical points, with illustrative delineations of the laryngoscopic appearances likely to be of diagnostic value.

ETIOLOGY.—Without doubt the most common cause is hyperæmia, and naturally all which tends to excite congestion will predispose to the production of new formations. Catarrh, the use of the voice during catarrhal attacks, certain occupations accompanied by the inspiration of noxious vapours, may all be considered predisponents.

The new formations in tubercular laryngitis cannot be considered as true growths, but there can be no doubt in the author's mind that syphilis, predisposing as it does to obstinate catarrhal inflammations with a great tendency to hyperplastic deposit, does play an important part as a factor in the production of true laryngeal neoplasms. This assertion is, however, disputed by Mackenzie. Growths occur usually at middle age, but may arise at an early period of life, or may even be congenital. They are naturally seen more frequently in males than in females.

It is almost impossible to give any estimate as to the comparative frequency of occurrence of these formations, owing to the fact that doubtless many cases of slight loss of voice due to the presence of small growths have not been investigated with the laryngoscope. On the other hand, those engaged in special practice may see a very undue proportion of cases of growth among the throat affections coming

under their notice, from the fact that persistent impairment of voice is a symptom for which medical relief is early sought.

Dr. Fauvel "does not hesitate to proclaim loudly the great frequency of polyps of the larynx," because he has seen 300 cases in fifteen years; but as he does not give the proportion of these cases in relation to all other diseases of the throat which he has treated, nor the number of other cases observed in France during the same period, the fact as a statistic is of little value.

Mackenzie saw in ten years over 100 cases; so it is possible, even allowing for the difference of area of France and England, that these growths are more common in the former than in the latter country. If so a cause may probably be found in the habit that Frenchmen have of speaking always à *haute voix* and in the open air, as well as in the abuse of tobacco, and the taking of injurious spirituous drinks.

SYMPTOMS: A. FUNCTIONAL.—Voice is impaired in nine-tenths of the cases under observation, and the alteration may vary from slight hoarseness to complete aphonia, there being a characteristic variation in vocal tone and power during the utterance of even very short sentences.

Respiration is impeded in about one-third of the cases, and the embarrassment may reach to serious dyspnoea in about 15 per cent.

Cough, when present, may be an indication of the situation of the growth at one of the cough-spots alluded to by Stoerk. The expectoration is scanty, and sometimes contains traces of blood or minute portions of the growth.

Deglutition is rarely affected unless the growth be on the epiglottis, in the hyoid fossa, or bordering on the anterior wall of the pharynx.

Pain is seldom a symptom of benign growths, though the sensation of a desire to get rid of a foreign body is frequently complained of.

B. PHYSICAL.—Physical characters as to colour, form, and texture, will vary not only according to the position, but also with the pathological varieties of the growth. Of these the most common are papillomatous, fibromatous, and fibro-cellular; myxomata, lipomata, fasciculated sarcomata (recurrent-fibroid), cystic growths, adenomata, and angioma, have also been found.

For a more detailed description of these different varieties, which partake of the anatomical characters of similar formations in other regions, reference must be made to the very complete essay on laryngeal growths of Dr. Morell-Mackenzie.

Examination of the various figures in Plate IX. will show the characteristic appearances and most common position of these growths.

C. MISCELLANEOUS.—In true benign formations there is seldom any external evidence of the disease. The general health rarely suffers unless respiration or deglutition be seriously interfered with.

TREATMENT.—As before hinted, the treatment of such cases can only be undertaken by those having special experience both in examination and manipulation with the laryngoscope.

The considerations which should guide the surgeon who undertakes this treatment were brought under the notice of the profession by the author in a paper

read before the Medical Society of London, and published in the *British Medical Journal*, May 8th, 1875. The following remarks are abstracted from this communication:—

In addition to its revealing an absolutely clear and undistorted anatomical image of any diseased process, or of any new formation, the laryngeal mirror directs the hand of the practitioner to apply with accuracy topical treatment to the spot or surface which may be subject to morbid action. This and other advantages have combined to make the laryngoscope, at first considered a mere physiological toy, in a very short space of time an instrument of immense power for good, and, it may be added, also for evil. It is an unquestionable fact, that many more ophthalmic operations are now performed than previously to the discovery of Helmholtz. Certainly, the vaginal speculum and uterine sound have robbed of much wholesome fear surgical interference within the cavity of the womb. But as the laryngoscope surpasses all these instruments, by combining completeness of revelation with opportunity for precision of local treatment, so also has its reputation suffered in far larger proportion from excessive instrumental interference with the organ over which it holds sway. It is some years since Dr. George Johnson "felt it his duty to remark upon the possibility that the larynx may get too much of local treatment." Yet it is to be feared that some who have quoted his warning have only done so to excuse their own overzeal in this respect.

Every sort of instrument has been introduced into the glottis, from the innocent brush to the cutting forceps or unguarded knife; and, while portions of

the larynx itself, as the epiglottis or a vocal cord, have been bodily removed, while, on the other hand, a case has been reported in which, by intra-laryngeal operation with the reflected light of the laryngoscope, a new vocal cord was made to replace one lost by disease. It is satisfactory, for the honour of British surgery, to be able to state that these abuses—as the author must fain consider them—of the laryngoscope have, for by far the most part, occurred abroad; and it is to be hoped the climax has recently been reached by removal of the entire larynx—an operation offering but little chance of relief, much less of cure.

In no department of practice with the laryngoscope do the foregoing remarks obtain with greater force than in that of the treatment of growths in the larynx; for, since Czermak, in 1859, first discovered, with the laryngoscope, a growth on the right vocal cord, and Lewin, eighteen months later, by aid of the same instrument, removed one, the goal of every student in throat-diseases has been to find an excrescence in the larynx, and, having found it, to remove it *vi et armis*, without for a moment considering how slight might be the symptoms he was attempting to relieve, or what serious results might ensue to his patient by the operative interference he adopted. It appears, therefore, that a few remarks with a view of inducing members of the profession to withhold their hands from efforts at mechanical removal of what is often, in every sense, a most benign formation, will not be considered inopportune or unworthy of attention.

The propositions submitted for consideration are the following.

1. Attempts at removal of growths from within

the larynx are not in themselves so innocuous as is generally believed, but, on the contrary, direct injury of healthy parts of the larynx, leading to fatal results, is by no means of unfrequent occurrence.

2. The functional symptoms occasioned by benign growths in the larynx are in a large proportion of cases not sufficiently grave to warrant instrumental interference.

3. Many of these new formations will disappear, or be reduced by appropriate local and constitutional medical treatment, especially when of recent occurrence.

4. Recurrence of laryngeal growths after removal *per vias naturales* is much more frequent than is generally supposed.

5. While primary malignant or cancerous growths are of rare occurrence within the larynx itself, benign growths not unfrequently assume a malignant and even cancerous character by the irritation produced by attempts at removal.

6. The instruments most generally now in use are far more dangerous than those formerly employed.

7. and lastly. The cardinal law, that "an extra-laryngeal method ought never to be adopted unless there be danger to life from suffocation or dysphagia," should be applied with equal force to intra-laryngeal operations; and it is a subject worthy of consideration whether, in many cases, tracheotomy alone might not be more frequently performed,—*a*, with a view of placing the patient in safety when dangerous symptoms are present; *b*, in order that the larynx may have complete functional rest; and, *c*, as a preliminary to further treatment, radical or palliative.

These several propositions will now be considered in detail.

1. *Attempts at removal of growths from within the larynx are not in themselves so innocuous as is generally believed, but, on the contrary, direct injury of healthy parts, leading to fatal results, is by no means of unfrequent occurrence.*—Case for case could be given in which this proposition could be verified; by relation of at least five instances in which perichondritis, or other equally fatal result, has followed as a direct consequence of intra-laryngeal instrumental operations for removal of benign growths from the larynx. Nor is there much room for wonder at such a statement. However able a laryngoscopist the operator may be, he is, in ninety-nine cases out of a hundred, guided in his knowledge of the exact situation of the growth by previous examinations; and, when he operates, the larynx spasmodically closing around the instrument as soon as it passes the epiglottis, the growth is caught according to his skill, or, more often, according to his good fortune. But it is easy to understand how a piece of mucous membrane, an arytenoid cartilage, or one of the cornicula, may be caught and injured also. This is especially the case with the unguarded instruments now generally employed. Further, it every now and then occurs, that spasm of the larynx after an operation on a growth is so severe as to require tracheotomy. The author has himself been called upon to perform it for such a reason.

2. *The functional symptoms occasioned by benign growths in the larynx are, in a large proportion of cases, not sufficiently grave to warrant instrumental interference.*—Dr. Morell-Mackenzie, in his exhaustive

essay, analyzes the symptoms of nearly three hundred cases, one hundred of which occurred in his own practice, while the remainder were derived from every published source, English or foreign. From this analysis, it is seen that impairment of the voice is the unique symptom in about fifty-two or fifty-three per cent. of cases of growth. Pain is a very rare symptom. Cough, and that not often severe, occurs but in twelve per cent. In two or three per cent., the sole sensation was that of "tickling." Difficulty of swallowing occurred in only eight per cent., and actual pain in swallowing was present in only one of these eight instances. In all these latter cases, the growths were attached to the epiglottis, and there could not be any objection to, or any difficulty in, their removal. These cases of glandular or fibrous growths on the epiglottis may, therefore, well be dismissed from further consideration as hardly coming within the scope of the present article. Dyspnœa was present in only thirty per cent., and dangerous dyspnœa in only fifteen per cent. In other words, as many as seventy per cent. of the cases were free from any element of danger whatever, and in eighty-five per cent. there was no serious danger to life.

It has been generally considered that mere impairment or loss of voice is in itself a sufficient reason for removing a laryngeal growth; but this opinion has been, and is, held in the belief that intra-laryngeal operations are at least harmless, if not always successful, and few practitioners have hitherto thought it necessary to warn their patient that there was a certain amount of risk to life attending these operations, and that, in comparatively few cases, is the voice

restored to its purity and entirety. The number of persons to whom the advice (appropriate to those subject to benign growths in other regions of the body) to watch and wait is given, must be very small; but, without doubt, there are a very large proportion of cases which never require treatment, and, if left to themselves, never assume a serious aspect. There is no reason to doubt that, while many of these formations remain thus stagnant, a large proportion would, if untreated, "frequently disappear spontaneously, being subject, as they are, to slow atrophy and resorption" (Virchow).

3. *Many of these new formations will disappear or be reduced by appropriate local and constitutional medical treatment, especially when of recent occurrence.*—Before going further, it must be premised that, except in the very rare and doubtful instances of a congenital growth, all these new formations originate as a direct consequence of hyperæmia, or, as Virchow puts it, "as the expression of an inflammatory irritation, which affects the whole surface, though it does not give rise to the same result in all parts." When growths are present, there is not unfrequently considerable general congestion of the laryngeal mucous membrane. It is, therefore, most important that every practitioner should make himself *au fait* with the use of the laryngoscope, and in every case of hoarseness examine the larynx of his patient at the very earliest date. Let him then treat the hyperæmia when it first occurs, and he will also see a new formation, should one arise, at its very commencement, or at least on the first approach of symptoms of its presence. It cannot be too strongly urged that the cause of a hoarseness is

not to be discovered by pressing down the tongue with a paper-knife, and looking into the back of the mouth, and that a localized inflammation, ulceration, or irregular formation within the larynx, is not to be healed by swabbing the pharynx with a brush charged with solution of nitrate of silver, or by pushing a probang similarly loaded down behind the tongue, unguided by the mirror, in the vain belief that it is going into the larynx, when, in the one case out of ten in which it certainly reaches no further than the superior surface of the epiglottis, it as certainly finds its way down the gullet.

This is not the occasion, nor would space allow, to consider in detail the particular treatment best adapted for laryngeal congestion. It may be, however, stated that, in addition to the use of general and topical remedial measures to reduce the hyperæmia, the practitioner should remove any cause likely to keep up irritation of the larynx, such as a relaxed uvula, unsuitable occupation, or exposure to sudden changes of temperature; and rest of the voice should in all cases of hoarseness be strictly enjoined. Frequent direct local applications with the brush are in no way necessary in cases of simple congestion of the larynx; but the moment the least irregularity of the cord is visible, the practitioner should at once make mineral astringent applications to the spot, daily, until there is diminution of the growth or ulcer, and then on alternate days, or less frequently, as may be required. There is a great and general feeling in the profession against local laryngeal treatment, and much of this feeling may be something more than prejudice; but the case may be put thus. No ophthalmic surgeon would say that he

would deem it necessary himself to drop solution each night and morning into the eye of a patient suffering from simple conjunctivitis; but, were the case one of ulcer of the cornea or granular lid, he would feel justified in advising the patient to have the necessary topical remedies applied by himself or some other medical practitioner; and if this be true of the eye, how much more is it of the larynx, where the part to be treated is not only hidden from the ordinary view, but where also some amount of technical skill is necessary to apply topical remedies with precision. The author has seen many cases of neglected hyper-

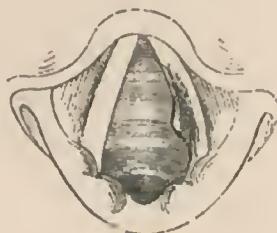


Fig. MM.

æmia of the larynx, in which, after an interval—sometimes only of a few weeks—a new formation has been seen to have sprung up; and such cases are not by any means necessarily associated with syphilis or phthisis. He has also observed cases of small growths in which, by early local treatment, a distinct cure has resulted. The last under notice, seen also by Dr. Llewelyn Thomas, was that of Miss T., aged nineteen, who for three months had lost her singing voice, and for two months had been distinctly hoarse in ordinary conversation. The condition, as seen with the laryngoscope at her first visit, is represented on Fig. MM, namely, a small growth on the left vocal cord, surrounded by bright red localized congestion. In a week from the

first application, February 3rd, 1875, the hyperæmia was removed. In a month she was quite well. When last seen, her voice was perfectly clear. Now, as to constitutional treatment, a word or two may be necessary; for it is of the utmost importance in the case of syphilitic ulceration of the larynx, to combine local and constitutional measures, pursuing each with equal vigour and attention. Those who believe only in the local origin of these formations will probably be of opinion that all internal remedies are useless. It is certain, however, that syphilis, and gout also, play an important part in predisposing to these local developments; and it may well be that medicines directed to counteract these dyscrasias are of good effect on the local condition; and so, in some cases, they have been found.

4. *Recurrence of laryngeal growths after removal per vias naturales is much more frequent than is generally supposed.*—Here again, as in illustration of the first proposition, numerous cases could be given in which the authors have been too quick to report their cures; and since the reports have been printed their patients have presented themselves either to their former attendant or to another, with a return of their disease. Six per cent. has been given as about the proportion of recurrence after intra-laryngeal removal. The author would put it at twenty per cent. Two cases lately under notice may be quoted as illustrative of this proposition.

The first was that of Mr. T. F., a baker, first seen on October 22nd, stating that his voice had been always rather thick, having as a boy suffered from enlarged tonsils. He had within the last twelve

months become hoarse, and was now almost voiceless. Until three or four weeks previously he had been for some months under the care of another practitioner, who had on eleven different occasions removed pieces of growth, and at the last two or three sittings he had informed the patient that there was the merest fragment left. There is not the slightest suggestion that the practitioner stated other than the truth; but it should be mentioned that all this information was not communicated by the patient until after he had been examined and a sketch made of his case (Fig. NN), when he exclaimed: "Why, that

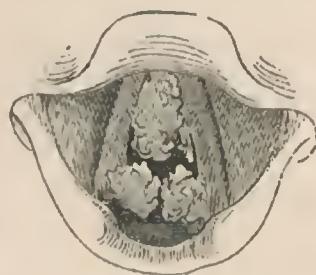


Fig. NN.

is just like the drawing made before I was ever operated upon." Regarding what was just now said as to constitutional treatment in these cases, it may be stated that this patient had contracted primary syphilis six years previously, followed by sore throat and skin eruption, and was, when first seen, suffering from palmar psoriasis. He had, however, received no medical treatment whatever from his former attendant, who told him that the eruption on his skin had no more to do with his throat than would a broken leg. Mr. Durham, who, with the author, saw the case in consultation, shrewdly remarked: "But you would think a broken leg had something to do with your

throat if you had hurt both with one and the same accident."

The second case is that of Walter L., a hairdresser, aged 19, first seen on the 3rd of March last at the Central London Throat and Ear Hospital. He stated that he had always been subject to catarrh, and, having lost his voice during an attack two years previously, had never since recovered it. He had attended for nearly a year at a general hospital, and only on his last visit had been examined with the laryngoscope. He had then attended another hospital, where, after removal of his uvula, pieces of growth

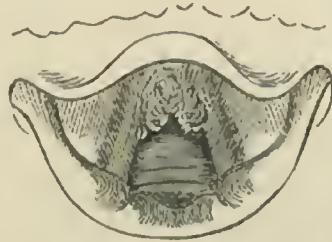


Fig. OO.

were evulsed from his larynx on four different occasions, at intervals of from seven to ten weeks. The largest piece was that last removed. He stated that his voice was now worse than before any operation at all, but that lately his breathing had become laboured. He gave as his reason for discontinuing attendance at this last institution, that he did not see what was the use of these operations if the tumours grew larger at each interval. Laryngoscopic examination showed two pink lobulated and symmetrical growths on the vocal cords at their anterior insertion (Fig. OO). There was great thickening and irritability of the pharynx; the larynx was also extremely congested, and it was

difficult to make even an ordinary examination. Although, therefore, this case is brought forward to show the strong tendency to fresh growth, even while under treatment, the fact that any growth at all had been removed reflects the greatest credit on the skill of the practitioner under whose care this patient had been.

It is worthy to be remarked, that where there is a tendency to fresh growth in another part of the larynx, or to recurrence in the original situation of the first formation, and repetition of operative procedures is made, the intervals between each successive recurrence almost invariably become shorter. This is only what takes place in recurrence of tumours in other parts of the body.

5. *Whilst primary malignant or cancerous growths are of rare occurrence within the larynx itself, benign growths frequently assume a malignant or even cancerous character by the irritation produced by attempts at removal.*—This proposition is to a large extent a corollary of the foregoing. Epithelioma commencing at the epiglottis or base of the tongue, or at the anterior wall of the œsophagus at its favourite spot just opposite the cricoid cartilage, often extends into the larynx; but it is rare to find malignant disease commencing in the vocal cords or ventricular bands; that is to say, in the cavity of the larynx itself.* One of the points, however, strongly brought

* This statement was made originally as the result of the author's own experience, which comprised at that period a personal knowledge of upwards of 20,000 cases of throat affections, and in which he had only seen two cases of what was considered to be primary cancer in the larynx. A doubt having been suggested of the accuracy of the

out by Mr. Simon and Sir William Jenner, and admitted by Mr. Do Morgan in the great discussion on Cancer at the Pathological Society in 1874, was, that cancer may be induced in tissue previously healthy by mere irritation, such as that of a needle; this result being due, according to the two former authorities, to constitutional vice, and to the latter, to local development. Whatever the cause, this is what is often found in the case of growths of the larynx. Allusion may be made to one such case (No. 87) in Dr. Morell-Mackenzie's report of one hundred cases, which he, having treated during the life of the patient as benign, most straightforwardly included in his list of benign cases, though somewhat to the detriment of his statistics. These are his remarks on the result of the *post-mortem* examination. "The luxuriant growth of the new formation in this case pointed to its being otherwise than of benign character; and its microscopic examination illustrates the extreme difficulty of arriving at accurate conclusions concerning the histology of these tumours even when the entire growth is brought under observation. The specimen was examined by several eminent microscopists, and was at first supposed to be a simple papilloma. On another examination, fibrous tissue was found to be developed, and it was pronounced to be fibro-cellular. Still later, my brother, Mr. Stephen Mackenzie, discovered some nested cells (laminated capsules of Paget). From the extreme importance of this ele-

assertion, reference has been made to the works of Tiirek, Cohen, Mandl, and others; all are found to agree in the rarity of primary cancer of the larynx proper, and the much greater frequency of epithelioma over any other form.

ment, the case must undoubtedly be placed in the category of carcinomatous growths, and be considered as epithelioma. The whole surface of the growth was covered by papilloma." The author was the more impressed with this case, because he saw the patient almost daily while under the care of Dr. Mackenzie, and he was for some months transferred to his sole charge.

6. *The instruments now most generally in use are far more dangerous than those formerly employed.*—Success in removal of growths from within depends so much on the individual manual dexterity of the practitioner, as well as on the method of his examining the larynx and the plan on which his other instruments are constructed, that it is not surprising that well-nigh every practitioner who has attempted the operation has invented a new instrument for the purpose. As with tracheotomy-tubes, many such instruments have been adapted for one particular case, their utility lapsing with its termination. As to others, one wonders how they could ever have been expected to be of use at all. At first, every instrument—and, indeed, some more cautious practitioners still confine themselves to such —was on the principle of a snare; and these were undoubtedly the safest. They are constructed more or less on the plan of a Gooch's canula, and have been used by Dr. Walker of Peterborough, Sir Duncan Gibb, Dr. George Johnson, and others. The fault of them is that, while safe from injuring other parts, they are not well adapted for hard or large growths. Dr. Mackenzie's tube-forceps are a step further towards more instrumental freedom and strength. Then came guillotines, rigid loops with sharp edges, fences-

trated knives ; and finally, in America, Germany, France, and England, common forceps, cutting forceps, and crushing forceps, strong enough to break a vesical calculus. Scissors, knives, guarded and unguarded, were also freely used. Galvano-cautery has been extensively employed abroad, but, happily for the patients, has not met with much professional favour for these cases in this country. As a curious evidence that even in Germany, where operative procedures are most boldly adopted, a feeling is dawning that it is possible to intrude too rudely into the larynx, it may be noted that Eyselle has recently suggested transfixing the growth by a needle passed through the thyroid cartilage from without, a procedure more easy in imagination than performance, and of little practical value. Dr. Jclenffy of Pesth has also, on the well-founded belief that one does not see much of the larynx after the instrument has entered it, invented a very safe guarded *écraseur*, by which, as he states, first one side and then the other can be freely and safely swept of excrescences. Undoubtedly, the safest instrument is the guarded ring-guillotine of Stoerk, which combines strength, cutting power, and the maximum of safety against wounding healthy parts. There is good reason for stating that, since instruments were used unguarded, injury to healthy structures, with consequent perichondritis, has occurred more frequently than was formerly the case.

7. *The cardinal law, that "an extra-laryngeal method ought never to be adopted unless there be danger to life from suffocation or dysphagia," should be applied with equal force to intra-laryngeal operations, and it is a subject worthy of consideration whether, in many*

cases, tracheotomy alone might not be more frequently performed,—*a*, with a view of placing the patient in safety when dangerous symptoms are present; *b*, in order that the larynx may have complete functional rest; and, *c*, as a preliminary step to further treatment, radical or palliative. If the truth of the previous propositions has been proved, there is not much necessity for enlarging on this. It is only necessary once more to impress the importance of a more general study of the laryngoscope, and of its use at an early stage in every case of alteration of voice; of the early treating of hyperæmia of the larynx, remembering that it is the most general forerunner of growths; of the early and active local treatment of such new formations by topical astringent applications; of the administration of suitable medicinal remedies when there is evidence or presumption of any constitutional cause or complication; and of the non-instrumental interference with these formations for mere symptoms of inconvenience, having always in view the dangers that may occur to healthy structures, and the fear that irritation of the growth may only make the disease worse, rather than better. The question of thyrotomy, or division of the external cartilage of the larynx, has not been discussed. Many of these operations have been done for reasons as little justifiable as some in which intra-laryngeal operations have been adopted. Certain foreign practitioners have not hesitated to divide at one operation two or three rings of the trachea, the cricoid cartilage, the crico-thyroid membrane, the thyroid cartilage, the thyro-hyoid membrane, and even the hyoid bone, for removal of a small growth causing but little annoy-

ance ; and all this with apparently no thought of such a consequence as perichondritis or caries. In many cases where there is dyspnœa—the only symptom which appears to warrant interference capable of leading to fatal results—tracheotomy, whether as an only step, or as preliminary to other measures, should much more frequently be adopted. With regard to this suggestion, it must be borne in mind that the operation of opening the windpipe is in itself a serious operation ; but it is generally agreed that in chronic diseases and in adult patients the procedure is unattended with much risk to life. Amongst other advantages in the class of cases under consideration, it offers the chance of removing the growth from below,—*i. e.* through the tracheal opening. Sufficient success has already attended this step to give encouragement to its more frequent adoption.

Looking at the many evil consequences likely to result, and actually resulting, from attempts at removal of growths from the larynx by the laryngoscopic or any other method, the proposition may be considered established, that there is not so commonly as is supposed any operative procedure for the treatment of these cases in which “no chance of danger is incurred.”

CHAPTER XV.

MALIGNANT DISEASE OF THE PHARYNGO-LARYNX AND LARYNX.

(Figs. 88 to 91, Plate IX.)

MALIGNANT disease attacking the ordinary position in the faucial region—the tonsils—has already been considered, and it has been stated how rarely it is found in the naso-pharynx or posterior pharyngeal wall. Its most common site in the pharynx is at the pharyngo-laryngeal orifice. It may commence at the base of the tongue, invade the epiglottis, and travel down the ary-epiglottic fold; in which case it will, in process of time, affect equally the special functions of deglutition and of respiration.

Carcinoma, when thus commencing, is almost invariably of the nature of epitheliomatous ulceration, and is, in the author's experience, the most common form in which the disease is manifested in this region. The disease, when so originating, has been denominated by Fauvel cancer of vicinity, a term which well illustrates its invasion of larynx from pharynx, and differentiates it from consecutive, or secondary cancer, which would rather imply that the disease has originated in a distant part, and has been propagated in the larynx as the result of a general systemic infection.

Primary cancer of the larynx is that form of malig-

nant disease which does not commence on the outskirts, but arises truly within the framework of the larynx ; that is to say, from the ventricle of Morgagni, from the ventricular bands, from the vocal cords, or from the laryngeal surface of the epiglottis.

If the term be limited to carcinoma of this nature, the disease will be found to be much rarer than it is considered even by Fauvel and those authors who have enlarged the limit of primary malignant disease.

The varieties of cancer which attack the larynx are two ; viz., epithelial and medullary, or encephaloid, of which, in the author's experience, the former is the more common. It may be briefly stated that the histological appearances of the disease when manifested in the larynx differ in no essential respect from those of the same forms elsewhere.

To quote Fauvel, it should be stated " that as, on the one hand, laryngeal cancer is not propagated by infection from distant organs, so also cancer which takes its origin at a distance from the vocal organ, and which in time may be generally developed in other regions, always respects the larynx."

It may be said then that laryngeal cancer confines and localizes itself in the region in which it takes its birth, and that cancerous affections of the immediate vicinity of the organ can alone reach it.

ETIOLOGY.—Hereditary predisposition appears to play but a small part in the production of cancer in the pharyngo-larynx.

The great predisposition of the male sex (1 to 10) to this disease would rather point to local irritation of occupation, or of habits of smoking and spirit-drinking as factors in its production.

Whether cancer be dependent on diathetic or irritative causes, it is worthy of consideration whether, in the female sex, the breast and uterus do not serve as outlets for it, and that its comparatively frequent occurrence in these organs accounts for its rarity in the pharygo-laryngeal region.

Cases have been recorded, one especially by Dr. Emile Blanc, of Lyons, in his very complete monograph on "Primary Cancer of the Larynx," in which the disease was clearly traceable to traumatic causes, —a possibility to which attention has already been drawn as likely to result from the irritation of the larynx caused by attempts at forcible removal of benign growths.

The disease occurs for the most part between the ages of 35 and 65.

SYMPTOMS.—Both subjective and objective evidence of the disease will naturally vary according to the part first attacked. When malignant ulceration commences at the base of the tongue, at the epiglottis, in the hyoid fossa, in the pharyngeal aspect of the aryepiglottic folds, or on the posterior wall of the larynx, difficulty of swallowing will naturally be the first symptom for which relief will be sought. If, on the other hand, the disease commences in the immediate vicinity of the glottis, the voice, and later the respiration, will be first affected, and very little, if any, dysphagia will be experienced at all.

The same may be said with regard to the physical symptoms, which will naturally vary not only with the origin, but with the variety, and with the progress of the malady.

Each symptom will, therefore, be described sepa-

rately, according to the point of origin, and the variety of the morbid process.

A. FUNCTIONAL.—**Voice.**—*Pharyngo-laryngeal epithelioma.*—Articulation is thick, and speech characteristic, from diminished mobility of the tongue and epiglottis; but vocal changes are not induced until the disease has reached the larynx. This it does either by pushing the arytenoid cartilage of the affected side out of the way, and so mechanically interfering with its action; by ulceration of the intrinsic muscles; by the cancerous mass and accompanying glandular infiltration involving the nerve-supply; or, lastly, by the disease affecting the arytenoid or cricoid cartilages. In this way it is very common for the vocal cord of the affected side to be paralyzed and hoarseness characteristic of such a complication to be produced. Actual aphonia is rare.

Laryngeal Epithelioma and Encephaloid Disease.—Here hoarseness is the earliest symptom of the disease, and may have existed a very long time before advice will have been sought. Complete aphonia often results as the disease advances, especially in the epithelial variety.

Respiration.—*Pharyngo - Laryngeal Epithelioma.*—Embarrassment of the respiration is the first symptom after difficulty of swallowing, and short breathing may be noticed even before there is any impediment to the passage of food. If, however, only the lingual surface of the epiglottis is diseased, it is quite possible that there may be no alteration of respiration whatever.

Laryngeal Epithelioma and Encephaloid.—Dyspnoea is a symptom which quickly follows impairment of voice: a peculiarity of the embarrassment is that it is

experienced only on exertion, and that comparatively very slight movement will cause shortness of breath: from this it is evident that the deeper tissues are very early infiltrated and the muscular fibres weakened. Later in the disease, severe paroxysms of dyspnoea are often experienced, due either to pressure directly on the trachea or on the recurrent nerve by enlarged glands, to œdema of the glottis, or to stenosis of the glottic orifice. In the two latter events, inspiration is much more impeded than ex-spiration.

Cough is not a prominent symptom of this disease, though the usual sensation of a foreign body is experienced, and gives rise to attempts at its expulsion. True cough will, however, be a prominent symptom if there be irritation at any cough-spot, or in the event of a paroxysm due to tracheal or nerve compression. The sputa should be carefully examined in a suspected case, since it is not at all uncommon for portions of the malignant growth, especially if it be of the epithelial variety, to be expectorated. Whenever this occurs to any extent, there is always temporary amelioration of the vocal and respiratory embarrassment. Traces of blood are often seen in the expectoration; when the cartilages are affected, the mucus becomes foetid, and attacks of haemorrhage may be frequent, severe, or even fatal.

Deglutition.—*Pharyngo-Laryngeal Epithelioma.*—As already suggested, difficulty of swallowing is naturally the first and most prominent symptom when the disease commences in this region, and it is astonishing how soon there will be dysphagia, with but very slight physical evidence of the disease. In one case, a patient of Mr. Furley, of West Malling, seen many

years ago, the author was enabled to diagnose carcinoma before there was any loss of tissue or the least obstruction to the passage of the largest bougie, but only a small spot of limited submucous congestion on the pharyngeal surface of the posterior wall of the larynx. The only symptom complained of was that of obstinate dysphagia. Not till a year later was there actual ulceration. In another case, occurring last spring, in which the author had the advantage of a consultation with Mr. Callender, there was the same unique symptom accompanied by emaciation; the only physical evidence was very slight ulceration of the free edges of the epiglottis, without any thickening whatever, though there was some external glandular infiltration. Had the ulceration been of syphilitic or any other non-malignant nature, the symptoms occasioned thereby would hardly have been noticed. There can, therefore, be little doubt that there is enfeeblement of the constrictor muscles at a very early stage of the disease.

Difficulty of swallowing is early accompanied by pain, deglutition of solids becomes impossible, fluids are ejected, and even the saliva cannot be swallowed, and is seen continually running away at the side of the mouth.

Laryngeal Epithelioma and Encephaloid.—In this form dysphagia occurs only as the disease attacks the posterior pharyngeal wall, or mounts towards the epiglottis and its arytenoid connections. It never fails, however, to be present, and in process of time it becomes as distressing as when the disease has primarily attacked the alimentary tract.

Pain.—When malignant disease attacks this region,

the same acute, lancinating, constant pain is present as characterizes the existence of the same form of disease in other parts. Allusion was made, in describing cancer of the tonsil, to the excruciating pain experienced in the ears when the patient attempts even to swallow his saliva, and Von Ziemssen has, with great justice, insisted on the presence of ear-ache as a positive argument in favour of the presence of laryngeal cancer. He "attributes the pain shooting out to the ear of the affected side to an irradiation of the irritation caused by the neoplasm in the sensitive fibres of the superior laryngeal nerve upon the auricular branch of the pneumogastric." To this it may be added, that in certain instances irritation of the inferior laryngeal may give origin to the same symptom.

B. PHYSICAL.—*Pharyngo-laryngeal epithelioma* commences with limited, and more or less circumscribed congestion, not differing in appearance from ordinary catarrhal hyperæmia, except in its limit of situation and in the thickening of the submucous tissue: the colour may deepen to almost a purple before the deposit becomes ulcerated. Ulceration almost always commences at the free edge of the epiglottis, or at the edge of either the glosso-epiglottic or ary-epiglottic ligaments; it quickly descends along the ary-epiglottic folds, always preceded by infiltration, and so it comes to the margin of the larynx, invades that organ, and at the same time displaces it, the boundary-line being seldom lost (figs. 88, 89, and 90, Plate IX.).

This disfigurement during the early stages of the disease is a strong diagnostic point in its differentiation from syphilis, in which deformity takes place as

the result of cicatrization. There is, of course, never the least attempt at repair in malignant disorder.

The Secretion of the actual ulcers is not plentiful, unless the true cartilages are attacked, but salivation is always excessive.

Laryngeal Epithelioma is in its physical appearances characterized by the presence of a tumour, ill-defined in form, and seldom circumscribed or pedunculated,—otherwise it has at first much the appearance of a benign epithelial formation; the surface is formed by irregular nodules standing out from beneath the mucous covering, and when proceeding from the vocal cords, the growth is of a white or pale rose-colour, though when situated in other parts, its hue may be often deepened.

As the disease progresses, the colour always becomes more pronounced, the growth increases in size to even enormous dimensions, and there are various points of ulceration. Still later, the whole mass may have the appearance of one sloughing tumour, from which, if the cartilages have been diseased, there will be abundant purulent secretion.

Laryngeal encephaloid Carcinoma.—This form will often be developed in the first instance as a defined tumour, or it may appear as a more or less uniform tumefaction of the soft parts, or as general sub-mucous infiltration; it is generally limited in its origin to one side of the larynx.

Its aspect is usually, except when proceeding from the ventricles or vocal cords, smooth and round; but in these latter situations it may assume the lobulated cauliflower appearance of an epithelial growth. In colour it is generally brighter than the epithelial variety; it is of soft consistence, and of very vascular

structure; it is therefore liable to early ulceration, and to frequent haemorrhages. As in the case of epithelioma, these tumours may attain very great size.

The most characteristic feature of carcinoma of the larynx, whatever be its variety, is the great deformity caused by the new formation. The tumour not only infiltrates and changes diseased portions, but pushes even healthy structures far out of their normal position, so that, as Dr. Blanc has well said, "at a comparatively early epoch of the malady the alterations of the larynx take forms so diverse, that not only does one cancerous larynx not resemble others, but even the same larynx examined at different periods will often present widely different aspects."

It is this characteristic displacement which may largely account for the severity of the dyspnoea when the glottic lumen does not appear proportionately narrowed, and this symptom may be often traced to mechanical pressure and to nerve-compression, more frequently than to actual stenosis.

C. MISCELLANEOUS. — Externally there is very frequently, but by no means invariably, or in the earlier stages, considerable glandular infiltration. Sometimes the growth itself may be felt by external palpation, especially when the disease has attacked the thyroid and cricoid cartilages.

The general symptoms are those common to the malignant cachexia, aggravated by the position of the growth, and its interference with vital functions. Occasionally, however, when encephaloid disease primarily attacks the larynx, and the functions impaired are respiratory rather than digestive, there will be

but little general emaciation. In a patient recently under the care of the author (fig. 91, Plate IX.), in conjunction with Dr. Brown, of Kentish Town, it was remarked at the autopsy that the body was even more than usually well nourished, as far as the presence of fat was concerned, though the tissues had the characteristic pale and bloodless appearance seen in the victims of malignant disease.

PROGNOSIS, COURSE, &c.—The termination of carcinoma, wherever situated, is universally fatal, but the course of malignant disease in the regions under consideration is very variable. Death takes place much more rapidly when the disease is first deposited in the pharyngo-laryngeal region, and nutrition is, as a consequence, primarily impaired.

From the first appearance of the disease the average duration of life extends to from two to three years, though it may be prolonged by more or less radical attempts at removal, and especially by tracheotomy.

The termination of epithelioma arrives more quickly than that of medullary cancer.

TREATMENT.—Consideration of the advisability of operative measures is always sure to be pressed upon the notice of the surgeon, since both the patient and his friends are naturally anxious that the obstruction to deglutition should be removed, and that the life-threatening dyspnoea should be relieved. There can be no objection to operative procedures, provided it be well understood on both sides that the relief, though it may be considerable, is but temporary, and that the inevitable termination can only be postponed.

In the early forms of pharyngo-laryngeal carcinoma great improvement in the symptoms, lengthened re-

spite from recurrence, and prolongation of life, may be given by destroying the disease by means of the galvano-cautery, and this is the form of operative treatment which the author would be disposed to advocate. Otherwise all remedies must be of the nature of sedative inhalations, anodyne liniments, and ear drops, with antiseptic gargles, and the internal administration of those remedies best calculated to assuage pain with the least disturbance of the powers of assimilation.

The operation of tracheotomy is attended with very considerable prolongation of life. Fauvel has shown (*loc. cit.*, p. 717) that in the most frequent form of malignant disease—epithelioma—the average duration of life of seven patients on whom *tracheotomy* was performed was *four years*; whereas *six* patients suffering from the same disease, who were *not* submitted to this operation, lived only on an average *twenty-one months*. *Eight tracheotomized* patients, suffering from encephaloid cancer of the larynx, lived an average of *three years and nine months*; while *seven, not tracheotomized*, survived on an average *three years*. Looking at the fact, that by such an operation the vital symptom of dyspnœa is relieved, and that further measures by galvano-cautery, &c., are rendered more easy and more safe, these figures may be taken as demonstrating, in the words of Fauvel, “*the utility, not to say the necessity, of this operation.*”

As to removal of the larynx entire on account of cancer, it is sufficient to point out that no case yet reported has lived more than six months, while the majority have been immediately fatal. It must not be forgotten that this disease rarely commences within

the larynx, but much more frequently invades the vocal organ, by extension from the pharynx. The surgeon, therefore, will be rarely able to limit his operation to the removal of the voice-box alone, and when the disease returns, as it must in process of time, death must be most painful. The only disease for which this measure appears to the author to be justifiable is in the case of recurrent fibromata or sarcomata, for removal of which it has been twice adopted, once by Bottini, and once by Dr. Foulis, of Glasgow. The latter physician's case is well known, from the report in the *Lancet*, October 5, 1877, and from his very interesting demonstration of the patient at the Medical Society of London, January 14, 1878. In this case the patient wears an artificial larynx, and has complete control of his voice.

One practical point which should never escape the notice of the surgeon, in the treatment of these cases, is reserved for conclusion, viz., the possibility that, in spite of apparently decided symptoms, both functional and physical, the disease may be due to the syphilitic dyscrasia; and it must still further be remembered that the one does not necessarily exclude the other. It is a good rule, therefore, to give antisyphilitic remedies, especially iodide of potassium, at the commencement of the treatment; care being taken, however, lest the error be made of mistaking improvement for a prognostication of cure.

CHAPTER XVI.

NEUROSES OF THE LARYNX.

THE neuroses of the larynx may be divided into two classes; viz., those affecting sensation and those affecting muscular movement.

NEUROSES OF SENSATION.

ANÆSTHESIA.—Diminished sensibility of the laryngeal mucous membrane is a symptom of several diseases, and is present in a large majority of those cases in which there is impairment of motor power. This diminution of sensation is without doubt due to peripheral causes in diphtheria, syphilis, and in some instances of long-standing chronic inflammation, and partially in those rare instances in which the patient recovers from typhus, variola, and erysipelas, which have been accompanied by severe throat complications.

In diphtheria, as we know, there is often superadded to peripheral paralysis, injury to the medulla; and the fact that even where the disease has been almost confined to the pharynx, parts supplied by the inferior laryngeal nerve have suffered, would indicate that in these cases the pneumogastric is also frequently involved. In hysteria and bulbar paralysis the anæsthesia is probably central in its origin.

Anæsthesia of the larynx has been noticed as being

exhibited in a marked degree in cases of cholera; but it is indeed common, in the last hours of life, to many diseases, especially those in which death is by asphyxia.

The principal Symptom is want of reaction to the presence of food or other foreign body in the larynx. Allusion has already been made to the fact of the great tolerance with which an hysterical patient will bear laryngoscopic examination; and this paralysis of sensibility accounts also for the difficulty of stimulating the muscles to motor action in cases of functional aphonia, unless a powerful current be applied directly to the laryngeal cavity. Von Ziemssen, therefore, has used the electrical current, carefully localized in its application, as a means of diagnosis.

The Prognosis of anæsthesia after diphtheria (for the other varieties do not call for further mention) is favourable even in those instances in which there continues impairment of motor action.

Treatment.—When the condition is clearly traced to a peripheral cause, faradization is generally all-sufficient; but in some instances the constant current, with one pole applied over the larynx, and the other down the cervical portion of the spine, is indicated. Internally, iron, strychnine, and phosphorus are of use. The author has found good results from phosphide of zinc given in doses of one-third of a grain. In those cases where there is paralysis of the epiglottis it may be necessary to feed the patient with an œsophageal tube. Von Ziemssen seems to fear the false passage of such a tube into the larynx. If, however, the index finger of the left hand of the operator be passed far back to the base of the tongue, and the tube be pressed

against the posterior wall of the pharynx, and made to pass behind the introduced finger, no difficulty whatever should be experienced.

HYPERRÆSTHESIA.—Increased reflex sensibility is a common symptom in diseases of the glandular structure of the larynx and pharynx, as distinguished from those diseases which may be considered interstitial.

We thus find it in chronic pharyngitis and laryngitis, and in laryngeal phthisis. The peculiar loud, barking cough of nervous females is due to this reflex excitability. It has been suggested by some authors that this hypersensitiveness is due to the highly nervous condition, so characteristic and easily comprehended a symptom in patients suffering from chronic pharyngitis, which may be denominated "speakers' sore-throat."

But this cannot be allowed, since in phthisis patients are by no means unduly nervous. Seeing also that the same symptom is very common in the throat inflammations of drunkards, it is much more probable that gastric derangement, associated as it is with all the diseases mentioned, is the cause of the neurosal excitability; and in proof of this it may be remarked that the reflex sensibility often continues after the local catarrhal disease has been cured.

With this condition are often associated many painful sensations, which have been alluded to under the headings of the different diseases.

NEURALGIA OF THE LARYNX is an affection which has received but little attention from laryngologists, and, in the true sense of the term, is rare, since, although patients not unfrequently complain of pain in the larynx as their only symptom, it is seldom that ob-

jective causes cannot be found. Of these the most frequent are general anaemia, and especially gouto-rheumatic exacerbations; patients who suffer from laryngeal neuralgia being almost always subject to similar affections of the fifth and of the sciatic nerves.

Syphilis plays but little part as a cause of the affection in this region. The author has seen not a few cases, thought to be true neuralgia in people of advanced age, careful examination of which proved that the pain was due to commencing chondrial or perichondrial changes.

Careful external, in addition to laryngoscopic, examination of the larynx, should therefore always be made in those cases in which pain is a prominent symptom. In cancer there is generally sufficient structural change to enable the observer to form an accurate diagnosis. The noteworthy symptoms in laryngeal neuralgic affections are that the pain is often unilateral, and that a sensation of numbness and cold along the whole of the affected side is experienced, in addition to deep-seated pain more or less distinctly localized in one spot. Is it not possible that the connection of the facial and the glosso-pharyngeal with the pneumogastric at its origin, and of the sympathetic, has more to do with the occurrence of laryngeal neuralgia than any affection of the superior laryngeal nerve itself?

Treatment.—Unfortunately, this disease is as troublesome and as intractable to all treatment in the larynx as in other parts of the body. The great indication is naturally to discover, and, if possible, remove the cause. Locally, applications of chloral and camphor, aconite, &c., and hypodermic injections, give relief,

and in some instances the inhalation of anodyne vapours is efficacious (Form. 41 and 23). General treatment need not here be enlarged upon, except to say that in the author's practice exhibition of monobromide of camphor has been attended with good results (Form. 73).

NEUROSES OF MOTION (Plate X.).

The division of these affections by Von Ziemssen into paralysis of motion in the domain of the superior laryngeal nerve, and of those in the domain of the inferior or recurrent laryngeal nerve, is well worthy of adoption.

PARALYSIS IN DOMAIN OF SUPERIOR LARYNGEAL NERVE.

This principally occurs in connection with paralysis of sensation. It is important to diagnosticate it in all those cases in which the muscles supplied by the recurrent are also attacked, as in such a case there will be disease or pressure on the nerve-trunk. In other cases it may be peripheral, and is then generally a sequel of diphtheria.

The Symptoms are: inaction of the epiglottis, allowing the passage of food into the larynx, a hoarse tone of voice and inability to produce high notes, due to impairment of tension (an act performed by the crico-thyroid) with a sense of fatigue after exercise of function. This condition, when exhibited in a mild degree, is often the result of over-use of the voice, especially during catarrh, impairment of tension being, in point of fact, commonly found in chronic pharyngitis. One of many such cases came under the notice of the author very recently: it was that of a young lady, sent by Dr. Gowers, who, after some months of

choir-teaching and leading, found her singing-voice greatly deteriorated, especially in the production of the higher notes, and in the power of singing for even a few minutes. There was a clear history of forcing of the voice and continuance of its use during a catarrhal attack. The larynx was, however, perfectly healthy (and it may here be stated that the author has never noticed the wavy line in the glottic space depicted by Dr. Mackenzie in his essay on "Hoarseness and Loss of Voice"), but there was congestion of the veins in the posterior wall of the pharynx, and slight granulation. An opinion was given that the condition was due to irritation of the superior laryngeal nerve, from its connection with the pharyngeal plexus, and such, it is believed, is the cause in all cases of paralysis of the superior laryngeal, in which there is not corresponding enervation of the muscles supplied by the inferior.

Treatment.—This should be carried out on the lines laid down in the remarks pertaining to diphtheritic paralysis and to chronic pharyngitis. When occurring in connection with the latter disease, faradization is of little service, unless the pharyngeal inflammation has been first subdued.

PARALYSIS IN THE DOMAIN OF THE INFERIOR OR RECURRENT LARYNGEAL NERVE.

Under this head will be considered impairment of motion of all the muscles supplied by this nerve, in other words, of all the intrinsic muscles of the larynx. The special forms are paralysis of adductors, bilateral or unilateral; paralysis of abductors, bilateral or unilateral; and paralysis of the laxors.

Muscular palsies due to implication of this nerve are much more varied, more frequent, and more serious than those of the superior laryngeal, since the number of muscles supplied by it with motor power is so much greater. The causes which may give rise to them may be central (cases of which are very rare); or there may be disease of the parent trunk at its point of origin (also rare) or in its course; or of the recurrent, either in its course (the most common cause) or at its peripheral extremities.

Cases of traumatic injury of the trunk from gun or sabre wounds have been reported, as also of injury from pressure by various tumours. These latter causes will exert an injurious influence on the recurrent in its course, while catarrh, rheumatism, excessive laryngeal exertion, perichondrial and chondrial changes, ulcerations and new formations in the larynx, may induce peripheral enervation.

It is comparatively seldom that one muscle or one set of muscles only is affected, and the division into paralysis of the muscles affecting the function of voice, and of those affecting that of respiration, although now fallen into disuse, was not without practical value.

As we have seen, paralysis of the crico-thyroid, supplied by the superior laryngeal nerve, almost always involves the muscles acting on the epiglottis, and is not infrequently attended with some loss of power of the other muscles which assist in tension of the vocal cords; viz., the internal thyro-arytenoids and the posterior crico-arytenoids. In paralysis of the adductors, impairment of the action of the lateral crico-arytenoids is coupled with that of the arytenoideus; and this last-named muscle is, on post-mortem examination,

generally found to be diseased in those cases in which death has been caused by paralysis of the posterior crico-arytenoids. Unilateral paralysis of the adductors is also seldom of a pure character, there being generally some impairment of abduction and of tension. In this class of diseases the impairment of the to-and-fro motion of the cords varies the shape of the glottic orifice. In some cases one or both cords rest midway between full adduction and complete abduction, and then assume the position observed in the normal larynx after death. Von Ziemssen has appropriately called this the "cadaveric position," and this term will be here adopted, since it tersely expresses a standard of comparison (fig. 92, Plate X.).

The diagnosis of the various palsies by the aid of the laryngoscope is thus easily mastered, though the causes can only be accurately ascertained by careful examination with stethoscope, ophthalmoscope, sphygmograph, and other instruments of precision.

The prognosis is in a large number of cases favourable, but should always be cautious, as the detailed account of the principal varieties will indicate. In very many cases, treatment, especially of an electrical character, is strikingly and permanently beneficial.

BILATERAL PARALYSIS OF ADDUCTORS—CRICO-ARYTENOIDEI LATERALES AND ARYTENOIDEUS (Fig. 93, Plate X.).

This condition is generally due to functional causes, the principal of which is general anaemia. Complete loss of voice is occasionally experienced after recovery from certain diseases which impoverish the blood. The history of many other cases is that of enfeeblement from long nursing of a sick relative, and similar causes,

tending to produce at the same time bodily weakness and mental prostration. The author cannot agree with Mackenzie, that "it far less commonly occurs in connection with amenorrhœa than might be supposed from the writings of some authors"; in point of fact, amenorrhœa or dysmenorrhœa is the more frequently coexistent uterine condition; and the most favourable periods of life for its occurrence in females are at the commencement and on cessation of menstruation. Allusion has been made in the chapter on laryngeal phthisis to the frequent recurrence of functional aphonia as a premonitor of that disease: in such a case it is a question whether enfeeblement of motor power in the lungs or local anæmia is the principal factor. It is certainly the former in the later stages of laryngeal tuberculosis, to which is added the separation of the arytenoid cartilages by tumefaction. Functional aphonia is much less frequently purely hysterical than is generally considered, and the term "hysterical loss of voice" but too frequently represents a want of inclination or ability to find out the true cause. It frequently occurs on the subsidence of a laryngeal catarrh, and it is occasionally produced by sudden fright.

SYMPTOMS.—The voice is simply lost, or absent, but involuntary acts, such as coughing and laughing, are phonetic; when the aphonia is the result of catarrhal conditions, however, these sounds are somewhat hoarse. In purely hysterical cases there is frequently corresponding functional paralysis of the lips and muscles of speech, constituting functional aphasia as well as aphonia. The respiration is often somewhat hurried, and if the affection be allowed to remain long

untreated, the lungs are liable to suffer. Other functional acts are unimpeded, and there is an entire absence of pain.

Laryngoscopic examination shows that on attempted phonation the vocal cords do not approach the median line. There is also generally witnessed some diminution in the power of separation when the patient attempts to take a deep breath. Absence of any new formation, or other mechanical impediment to approximation of the cords, will complete the diagnosis. The mucous membrane is generally pale in colour, though in catarrhal cases its hue may be deepened.

PROGNOSIS.—Recovery from this condition, under suitable treatment, is for the most part speedy, though every now and again one meets with an instance obstinate to all efforts: in relation to life, the most favourable opinion may be given, though the possibility of a tubercular tendency must not be lost sight of.

TREATMENT.—If stimulating inhalations, general tonics, and change of air fail, faradization should be employed. In many cases, if the current of one pole be applied to the back of the tongue and the other over the thyroid region, the voice will be restored; but when this fails, there should be no hesitation in introducing the electrode within the larynx. These applications should be continued daily till the voice is permanently restored.

Those hysterical cases are without doubt the more intractable in which a long course of toying with this valuable therapeutic agent has been indulged in; for no better word can be applied to the long-continued use of external galvanism applied by the patient or by friends. Allusion has been made to the diminished

sensibility of the larynx in purely hysterical cases ; but care must be taken, in applying the current for the first time, that the power be not too strong, lest the fright thereby induced serve only to increase the malady intended to be relieved.

In many cases strong moral influence is necessary to prevent the voice, once restored, from lapsing back to the whisper, an event which may be considered as the result of habit of the larynx. In some instances in which aphonia occurs at the menopause there is occasionally some functional dysphagia, associated also with neuralgia ; in these cases the electric bath and the constant current may be employed in addition to topical remedies.

UNILATERAL PARALYSIS OF ADDUCTORS (Fig. 94, Plate X.).

“ May be due to chronic toxæmia, lead, arsenic diphtheria, &c. ; may result from cerebral disease, or may be caused by cold or muscular strain ; and is met with after small-pox, in constitutional syphilis, and in phthisis.” (Mackenzie.)

SYMPTOMS.—Unless the brain be affected, loss of voice or hoarseness is the only functional sign, and the acts of coughing, sneezing, and laughing are aphonic or of diminished phonetic power. Difficulty of swallowing is sometimes experienced.

With the laryngoscope, the affected cord is seen, on attempted phonation, to be immobile, and to remain in the cadaveric position while the healthy cord acts freely. There is the same diminished power of abduction as in the bilateral paralysis. The only point of value in diagnosis is the possibility that the inaction may be due to perichondrial inflammation,

the swelling in this case being often beneath the vocal cords, and liable, therefore, to pass unnoticed.

PROGNOSIS is favourable when the cause is local.

TREATMENT.—Faradization is of great value in toxæmic cases, and should be accompanied by stimulant inhalations and tonics.

BILATERAL PARALYSIS OF ABDUCTORS.—CRICO-ARYTENOIDEI POSTICI (Fig. 95, Plate X.).

This rare condition is the most serious of the individual paralyses of the larynx, since it implies almost complete closure of the portal of life, giving rise to stridor, dyspnœa, and even asphyxia.

ETIOLOGY.—Mackenzie considers the causes of the condition to be generally cerebral; but an analysis of nine reported cases collected by Von Ziemssen, of which three were fatal, shows that in one of these there was compression of both recurrent trunks; in the second there was no evidence of even microscopic alteration of either recurrent or pneumogastric, and only in the third was there disease of the root of the pneumogastric and spinal accessory.

Of the six cases in which death was not reported, one occurred after typhoid fever, another after pneumonia following erysipelas, and in the four other cases the origin, though doubtful, was as likely as not dependent on catarrhal influences.

Any new growth, whether it be simple, glandular, hypertrophic, or of an aneurismal or malignant nature, if it press upon both recurrents, may, of course, produce bilateral paralysis. Baumler has narrated one interesting case of bilateral palsy from pericardial exudation.

SYMPTOMS: A. FUNCTIONAL OR SUBJECTIVE.—Voice may be but little affected, at least in the moderate functional use necessary for quiet conversation, but may be slightly hoarse if complicated by even moderate catarrh. No observations have been made with regard to the singing voice, but one would naturally expect that both tensor power and sustaining quality would be enfeebled.

Respiration.—This is the function which is most seriously impeded; the impairment consisting in extreme inspiratory stridor, ex-spiration being normal. This condition is first evidenced on exertion, as in going up stairs, but is later manifested in an extreme degree during sleep; so much is this the case, that one instance has been reported in which it became necessary to remove a patient to a room in the garden of a hospital, as the whole wards were disturbed by his unconscious "howls."

Naturally such a disturbance of function leads to severe pulmonary trouble, and, if not relieved, will eventuate in carbonic acid poisoning.

Cough is not necessarily a prominent symptom, but when present it is always stridulous.

B. PHYSICAL OR OBJECTIVE.--There need be but little alteration in the colour or surface-texture of the larynx, but the laryngeal mirror at once reveals the condition by the fact that the glottic space is seen to be reduced to a mere slit (not an ellipse, as in paralysis of the thyro-arytenoids); and as a further characteristic, it is seen that this narrowed opening is smaller during the inspiratory than during the ex-spiratory act. This phenomenon is explained by "excess of external atmospheric pressure over that of

the rarefied air within the trachea, while in expiration the glottis returns to its original size. On phonation the linear slit is narrowed in a normal manner, and the vibrations of the vocal eords show nothing abnormal."

C. MISCELLANEOUS.—Externally there may be evidence of glandular or other enlargements, and on auscultation there may be found the signs of an aneurismal or glandular growth in the mediastinum, though the loudness of the inspiration is a great bar to accurate stethoscopic diagnosis. There is naturally much constitutional derangement and wasting.

DIFFERENTIAL DIAGNOSIS.—The only disease which could be mistaken for this condition is one equally serious and still more rare, viz., cicatricial fixation and adhesion of the arytenoid cartilages from syphilitic ulceration, of which one case has been reported. In spasm of the glottis, the variation in the appearance at different periods will at once clear up the diagnosis.

PROGNOSIS, COURSE, AND TERMINATION.—This affection is, of course, most serious, but it is by no means hopeless, provided it be not due to central lesion or destructive tumours. Of the nine cases previously referred to, three were reported as living long after the introduction of a canula; two either improved or remained stationary, without the necessity for operative interference; and one received distinct benefit from electrical treatment. In those cases in which death occurs, there is always found atrophy and fatty degeneration of the posterior crico-arytenoid museles.

TREATMENT.—Even if the origin be central, life may be prolonged and the distress of the patient greatly relieved by the performance of tracheotomy.

Mackenzie considers electrical treatment "scarcely a safe procedure," but in the only recorded case in which decided improvement took place—that of Von Ziemssen—the benefit was entirely due to the alternate application of the induced and the constant currents.

In the cases of Gerhardt and Nicolas Duranty, the same treatment, although followed by no benefit, was equally unattended by any injurious result.

UNILATERAL PARALYSIS OF AN ABDUCTOR
(Figs. 96 and 97, Plate X.).

This disease is by no means so rare as the preceding. It implies pressure on the recurrent nerve supplying the affected muscle; and from the anatomical situation of the nerve, the left side is much more frequently affected than the right.

ETIOLOGY.—The sources of origin of unilateral abductor paralysis are much the same as those of the bilateral form. Most frequently there is pressure or stretching of the recurrent itself, but the cause may primarily be located in the trunk of the pneumogastric. Aneurism of the arch of the aorta; enlargement of the bronchial glands around the root of the lung or in the course of the nerve; hypertrophy, whether simple or malignant, of the thyroid gland; carcinoma of the anterior wall of the oesophagus, with infiltration in the vicinity of the disease; or syphilitic cicatricial narrowing,—may all involve the left recurrent. Similar causes may produce encervation on the right side, except that aneurism will be of the innominate or subclavian instead of the aorta; and peculiar to this side is induration of the apex of the lung (page 228).

SYMPTOMS: A. FUNCTIONAL OR OBJECTIVE.—Voice is

always rough, harsh, impure, and unequal in tone, or distinctly hoarse, but is seldom or never aphonic.

Respiration.—Inspiratory stridor is characteristic of this affection, as of the bilateral form, but the difficulty of breathing is naturally not so exaggerated, and the attacks are more paroxysmal in character. The slightest catarrhal influences produce severe exacerbations.

B. PHYSICAL OR OBJECTIVE.—There is usually some general congestion of the mucous membrane, especially of the affected vocal cord, which, with the laryngoscope, is seen not to depart from the middle line; or often, there is some paralysis of adduction also, which causes it to assume the cadaveric position. This is especially observed in those cases due to glandular enlargement and to syphilitic deposit.

C. MISCELLANEOUS.—Nothing more need be said under this head than was stated in considering the preceding affection. Pain and disorder of deglutition will be observed, should the disease be malignant and the oesophagus greatly narrowed.

PROGNOSIS, COURSE, AND TERMINATION.—A most serious opinion must be given in every case of this nature, since the disease which gives rise to it is of itself so frequently fatal. Cases do, however, every now and then come under notice, in which the paralysis assumes a chronic and remittent form. Such a one occurs to the memory of the author in the instance of a lady aged 53, first seen in August, 1873, who suffered from occasional severe attacks of hoarseness and dyspnoea. On laryngoscopic examination, congestion and paralysis in abduction of the left vocal cord was observed. There was also dulness both in front and behind, about the root of the lung.

The author had the advantage of a consultation with Dr. Quain, and the affection was diagnosed to be due to enlarged bronchial glands pressing on the recurrent nerve. Under treatment by external counter-irritation, and the internal administration of the iodide of iron, the patient greatly improved, and has only had two severe relapses, one having occurred quite recently, since she first came under notice, though there has always been some exacerbation on the occurrence of catarrhal or general debilitating influences.

TREATMENT.—Except the means just alluded to as suitable in scrofulous and simple glandular enlargements, there are no measures likely to be of any real benefit, though tracheotomy may give relief to respiratory distress.

PARALYSIS OF LAXORS, THYRO-ARYTENOIDEI
(Fig. 98, Plate X.).

In this affection, which is opposed to paralysis of tension, the lower notes of the voice are impure or lost. The cause is either functional over-exertion or hysteria. There is generally associated inaction of the adductors, and this complication accounts for the fact that when the voice is restored in functional aphonia it often assumes a peculiar high-pitched tone, due to impairment of the laxors. The laryngoscope reveals a characteristic elliptical opening on phonation.

Another paralysis associated with this is that of the arytenoideus proprius, which leads to a double elliptical or hour-glass shape of the glottic space; the narrowing being produced by the prominent vocal processes (fig. 100, Plate X.). The arytenoideus may be also separately paralysed (fig. 99, Plate X.).

PROGNOSIS is favourable as far as life is concerned, but in long-standing cases the hoarseness may be obstinate.

TREATMENT consists in complete functional rest, faradization, and in the general administration of nervine tonics.

SPASMODIC AFFECTIONS.

The principal spasms of the larynx are that of the tensors and that of the adductors of the vocal cords, of which the latter is by far the more important.

SPASM OF THE TENSORS may be dismissed in a very few words. Attention has been chiefly, if it was not primarily, drawn to this affection as a distinct disease by Mackenzie, who defines it as a disease "causing the vocal cords to be unduly and irregularly stretched, and consequently giving rise to a voice which is feeble, jerky, unsteady, and constantly rising to a high key."

One has only to read further the symptoms of this affection, and the causes which give rise to it, to feel assured that the want of co-ordination in the laryngeal muscles is of neither neuropathic nor myopathic origin, but is in point of fact the result of improper voice-production, the patient having either not learnt how to breathe when speaking, or else having spoken after the lung ceased to contain enough air to keep the cords in regular vibration. It is thus found amongst the very class of speakers subject to chronic pharyngitis due to "forcing" of the voice; and, indeed, such pharyngeal disorder is never absent from those labouring under spasm of the tensors.

For further information on treatment, &c., the reader is referred to the remarks on this portion of

the subject contained in the chapter which considers pharyngeal diseases (p. 102). It is quite certain that no such case can be cured by any medicines, local or internal, independent of pharyngeal remedies; nor is faradization of the least service, unless it be accompanied by rest to the voice, and, on resumption of its use, a proper elocutionary method. On the other hand, if these latter measures be adopted, electrical treatment may often be altogether dispensed with.

SPASM OF THE ADDUCTORS, that of the tensors being dismissed from further consideration, may be better described under the broader term, spasm of the glottis, and implies a spastic disturbance of automatic muscular movements of the larynx, of varying duration, from a few seconds to at most a few minutes. The particular act which is disturbed is that of inspiration, during which there is convulsive adduction of the vocal cords, causing a narrowing of the glottic space at the moment when it should be widest.

ETIOLOGY.—The disease is essentially one of childhood, or rather of infant life, and occurs most frequently between the ages of four months and two years. The male sex is more liable in the proportion of at least two to one. It is occasionally seen in children subject to it up to the age of seven or eight years. Until quite recently the causes of this affection were but imperfectly understood. It is now agreed, however, that there is—if not an hereditary—a decided family predisposition to this spasmodic affection; that the majority of patients are either the subjects of rachitis or disposed to that condition, the fontanelles being open, and the skull-cap and thorax unusually compressible; that the disease occurs most frequently in cold climates and in cold

seasons, and that reflex irritation from mal-assimilation of food plays also an important part.

In the author's opinion this last cause is of greater importance than is generally admitted, for, given the other predisposing causes, the presence of even a comparatively small atom of indigestible material will excite to an attack ; such, for instance, as the currant from a bun, a raisin or a grape-skin, or a pip-stone of these last-named fruits. It is clear, therefore, that peripheral irritation of the pneumogastric either in its laryngeal, pulmonary, or gastric branches, is a frequent factor.

Enlargement of the thymus gland was considered by Kopp to be the principal cause of laryngeal cramp in children, an opinion which did not bear further examination so far as to its being anything like a universal cause ; but many irrefragable cases have been reported in which post-mortem examination showed thymic glandular pressure on the recurrent to have been the cause of death. It is here thrown out as a suggestion, the truth of which can only be confirmed or dispelled by further experience, that, in the cases of young girls subject to glottic spasm, there is predominating a disposition to thyroid congestion, and to either direct or to sympathetic nerve-irritation.

Spasm of the glottis occurs in adults under two circumstances :—1. In females, chiefly at the age of puberty ; 2. From traumatic causes, to which some allusion has been made in the chapter on benign neoplasms.

SYMPTOMS.—The peculiar symptoms of this disease, which have given rise to the terms child-crowing, laryngismus stridulus, and false croup, are too well known to need detailed description, and may be

found recounted in any work on general medicine. It is only necessary to remind the reader that the suddenness and shortness of the attack, and the absence of signs of inflammation, differentiate this affection from true croup; also, that very slight attacks, especially when occurring during the day, are apt to pass unnoticed. Any child, therefore, whose frame and family history predispose to the complaint should be most carefully watched, if he manifest the least disposition to catch his breath during the excitement of play or of so-called "passion," often misconstrued evidence of convulsion. The alarmingly sudden termination of this disease might be often averted were mothers forewarned to observe these slight indications.

TREATMENT.—In the case of children, cod-liver oil, the phosphates of iron and lime, iodide of iron, &c., are indicated for systematic administration. Small doses of chloral, or of bromide of potassium, may be given at night, but especial regard must be had to the form of nutriment administered, particularly if the child be brought up by hand. During an attack, the importance of placing the child in the sitting posture, or of bending the body forward, slapping the back, hot baths with cold affusions to the head, &c., are all well known. Whether or not the act of dentition be an exciting cause to an attack, lancing of the gums gives undoubted relief even in cases where no tooth appears to be pressing to eruption.

In young girls, the indications must be to establish the menstrual function, and to treat actively, by local measures, any thyroid congestion or enlargement. In traumatic spasm, tracheotomy is often called for; and this step is sometimes necessary in those troublesome hysterical cases which occasionally come under notice as occurring in females about middle life.

CHAPTER XVII.

ON THE DIFFERENTIAL DIAGNOSIS OF LARYNGEAL DISEASES.

IN a lecture under a similar heading, which appeared in the *Lancet*, January 6, 1872, Dr. Morell-Mackenzie well remarked, that "although the removal of growths from the larynx, and the restoration of the voice in cases of functional aphonia by faradization of the vocal cords, are, perhaps, the most striking results which the invention of the laryngoscope has brought about, the accurate diagnosis of chronic affections is really the most important annexation which that instrument has accomplished. New formations of the larynx, in the circumscribed sense of the word, are necessarily rare, and their treatment *per vias naturales* must of necessity remain in the hands of a few. Functional aphonia also may often be successfully treated by general measures, but the prospects of thousands of patients depend on whether a chronic disease of the larynx be simple, or benign, whether a thickening be catarrhal or scrofulous, whether an ulcer be syphilitic or cancerous. With the aid of the laryngeal mirror alone, and often when other guides are altogether wanting, the practitioner may be able to promise his

patient a speedy and complete recovery, or he may be obliged to inform him that a loss of vocal function will necessarily result from the disease; or he may even be forced to acknowledge that medical art cannot assist the fatal malady. Any well-educated practitioner who can give a few weeks' study to diseases of the larynx as seen with the laryngoscope, can easily acquire sufficient dexterity to form a reliable prognosis. . . . The reputation of a professional man so often depends on prognosis, that for that purpose alone every practitioner engaged in the general treatment of disease should learn to use the laryngoscope."

Perusal of the foregoing chapters on laryngeal diseases will have shown, that, although certain functional symptoms are common to many affections, there are distinctive physical signs, which to the practised eye will at once reveal the true nature of the disease. It is proposed in this concluding chapter to review the prominent points of differential diagnostic importance; and for convenience of reference they have been arranged in a tabular form.

An analysis of this table will show that a variable but still appreciable amount of dependence is to be placed on functional signs, so that the practised ear will recognize in the voice and cough, and in the description of the patient's sensations, the nature of the disease even before the larynx is examined.

Nevertheless, the power to interpret symptoms is in a large degree influenced by knowledge of the local conditions which would give rise to them; and those who boast how much they can discover without the laryngoscope forget how important a guide-post this instrument has been to that end.

Although, therefore, we may without examination form a correct opinion as to the cause of the symptoms, the exact character and situation of the affection can only be discovered by the aid of the laryngeal mirror.

The four most important non-acute diseases of the larynx to differentiate are simple inflammation, advanced syphilis, phthisis, and cancer, and the table shows us the following prominent characteristic points:—that a larynx affected with simple chronic inflammation is hyperæmic, non-infiltrated, non-ulcerated, unaltered in position, and generally accompanied by pharyngeal disease; that in syphilis hyperæmia tends to destructive ulceration, *followed* by thickening, narrowing, and characteristic deformity; that in phthisis colour is diminished, tumefaction, especially of epiglottis and ary-epiglottic folds, but *without* deformity, *precedes* ulceration, which commences superficially; also that the lungs are involved; lastly, that in cancer, angry hyperæmia, ulceration, and thickening, whether commencing from within or more often from without the larynx, tend to great displacement of normal parts, which alteration of position is also much influenced by enlargement of surrounding glands..

In addition to these points, syphilis is distinguished from cancer and phthisis by its greater amenity to suitable treatment.

Symptoms.	Acute Laryngitis.	Chronic Laryngitis.	Syphilitic Laryngitis.	Tubercular Laryngitis.
A. — FUNCTIONAL OR SUBJECTIVE.				
Voice.	Hoarse, becoming aphonic.	Hoarse, uncertain, easily fatigued.	<i>Secrd</i> Hoarse. <i>Tertrd</i> Characteristically raucous; seldom aphonic.	Sometimes aphonic in earlier stages; completely lost in advanced disease.
Respiration.	Not embarrassed prior to oedema; then stridor, dyspnoea, and even apnoea.	Seldom embarrassed.	<i>Secrd</i> Unchanged. <i>Tertrd</i> Increasing embarrassment according to amount of stenosis.	Early hurried; greatly embarrassed with advance of disease.
Cough.	Dry, hard, shrill, metallic; aphonic; on oxidation, moist.	Irritation, with slight expectoration of glutinous pellets.	<i>Secrd</i> Slight hacking. <i>Tertrd</i> Infrequent, with but slight expectoration, unless perichondritis supervene.	Greatly influenced by amount of lung disease: painful. Expectoration variable; generally frothy.
Deglutition.	Painful when oedema has taken place, or from associated pharyngeal inflammation.	Rarely affected.	<i>Secrd</i> Normal, unless deposit on epiglottis or arytenoids. <i>Tertrd</i> Often difficult; very rarely painful.	Extremely difficult and painful, from early period to termination.
Pain and altered sensation.	Sensation of tightness and constriction: tender to external pressure.	Painless: sensu of fatigue after vocal exercise.	Characteristic absence of pain excepting when cartilages are attacked.	Pain only experienced in functional acts.
B.—PHYSICAL OR OBJECTIVE.				
Colour.	Intense, uniformly increasing superficial hyperæmia; translucent on advent of oedema.	Partial and modified submucous hyperæmia.	<i>Secrd</i> Mottled, more or less symmetrical hyperæmia. <i>Tertrd</i> Hyperæmia of portion attacked prior to ulceration: permanent infiltrated appearance.	Anæmia followed by opaque greyish colour; margins of ulcers hyperæmic.
Form and Texture.	Thickening and stenosis from oedema, loss of tissue rare, except in phlegmonous form.	Occasionally slight erosion, never ulceration, thickening or narrowing.	<i>Secrd</i> Occasional superficial ulceration at vocal process; slight general submucous infiltration. <i>Tertrd</i> Deep, circumscribed destructive ulcers, of yellowish colour, followed by cicatricial narrowing, occasionally paralysis and quasi-new formations.	Solid submucous thickening of epiglottis and aryepiglottic folds, elevation and ulceration of racemosous glands giving worm-eaten ulcers, which conunningly and attack deeper tissues.
Position.	Unaltered.	Unaltered.	<i>Secrd</i> Unaltered. <i>Tertrd</i> Deformity from intrinsic cicatrices and pharyngeal outgrowths.	No displacement: tendency for thickened parts to transgress boundaries of pharynx.
C.—MISCELLANEOUS.				
External.	Pharynx usually synchronously implicated.	Pharynx usually synchronously implicated.	<i>Secrd</i> Pharynx and skin generally recently implicated. <i>Tertrd</i> Seldom synchronous implication, but usually scars of previous similar pharyngeal ulceration, and possibly adhesion.	Lungs either primarily, synchronously, or subsequently involved. Generally anaemia, rarely ulceration of pharynx. General emaciation.

Perichondritis.	Benign Growths.	Malignant Growths.	Neuroses.
Painful, easily fatigued, but not necessarily impaired.	Very variable, from slight hoarseness to complete aphonia, even in the same case.	Impaired by mechanical causes when invaded from pharynx; may be early lost in primary disease.	Lost in bilateral paralysis of adductors; impaired in other paralyses; not necessarily in spasm.
Variable, according to cartilage attacked.	Seriously embarrassed in one-sixth of cases: depends on situation.	Early quickened on exertion; later paroxysmal dyspnoea from stenosis or compression.	Only embarrassed in paralysis of adductors and in spasmodic affections.
Generally early spasmodic; with caries characteristic. Purulent expectoration, unless abscess is encysted. Varying from dysphagia to aphagia, according to pressure on gullet.	Generally limited to effort to dislodge foreign body; may be expectoration of atoms of growth. Only impaired in rare cases, in which epiglottis or ary-epiglottic fold is involved.	Not necessarily present; expectoration scanty: occasionally blood and portions of neoplasm. Always difficult and painful: often the earliest symptom.	Paroxysmal, when recurrent is implicated and in spasmodic affections. But slightly impaired or unaffected.
Pain variable with cause; most severe in gouty form, but not then constant.	Characteristically absent.	Ever present and severe, extending upwards to ears, and to sympathetic glandular enlargements.	Only experienced when sensory system affected. Diminished sensation in motor paralyses and in anaesthesia.
Hyperemia generally limited to portion attacked, sometimes extending to contiguous vocal cord.	Variable with nature of neoplasm; slightly increased vascularity of mucosa generally.	Increasing localized vascularity tending to lividity in any part except vocal cords or ventricles, when neoplasm is whitish-grey or pale rose.	In paralysis of adductors, occasional vascularity of affected vocal cords.
Ulceration often absent, substituted by encysted abscess, causing narrowing, compression, and paralysis.	Varies with situation, size, and nature of growth, never ulceration. May cause narrowing and paralysis.	May cause compression, narrowing, and paralysis before ulceration, which is always accompanied by thickening. Extensive indolent, grey, greenish, or almost black ulcers.	Form of glottis varying with nature of paralysis, without extrinsic thickening.
May be considerable alteration of supra and infra-glottic space.	Position of normal parts seldom changed.	Early displacement, especially when invading from pharynx, and when neighbouring glands enlarged.	Paralyzed cord not displaced, but often fixed in one position.
Occasional constitutional manifestations.	Nil.	Glandular infiltration, but complete immunity of other organs of body from similar disease both prior and subsequent to appearance in laryngo-pharynx. General emaciation.	Sympathetic functional disturbances in other organs, or organic disease of cardiac, or lymphatic system, or associated cerebral disease, or chronic toxæmia.

FORMULÆ FOR REMEDIES.

As previously stated in Chapter V., many of these formulæ are identical with those contained in the Throat Hospital Pharmacopœia, to which the reader is referred for further interesting and serviceable details. The list here given is not very extensive, but it includes all those remedies which the author has found to possess distinct therapeutic action. The formulæ are arranged in the order in which they are considered in the Chapter on the Therapeutics of Throat Diseases.

GARGARISMATA—GARGLES. Page 53.

1. Gargarisma Acidi Acetici, T.H.P.

℞ Acidi Acetici	...	...	...	...	fl. ʒijss.
Glycerini	...	...	...	...	fl. ʒijj.
Aquæ	...	...	...	...	ad fl. ʒx.
Misce.					

Use.—Antiseptic and stimulating when inflammatory throat affections complicate the exanthemata.

2. Gargarisma Acidi Carbolici.

℞ Glycerini Acidi Carbolici	...	fl. ʒj. ad ʒij.
Aquæ	...	...
Misce.		

Use.—Stimulant and antiseptic. Useful in cases of pharyngitis sicca, and all forms of ulceration; also diluted with warm water as a mouth wash in tonsillitis.

3. Gargarisma Acidi Nitrici.

℞ Acidi Nitrici Diluti	...	...	...	fl. ʒj.
Tincturæ Cinchonæ	...	...	...	fl. ʒijj.
Aquæ	...	...	...	ad fl. ʒx.
Misce.				

Use.—Stimulant in cases of tertiary syphilitic ulceration of the pharynx.

4. **Gargarisma' Acidi Tannici et Gallici, T.H.P.**

R. Acidi Tannici	...	...	...	...	gr. 360.
Acidi Gallici	...	...	...	...	gr. 120.
Aquæ	...	...	...	...	ad fl. 5j.

Misce.

Use.—This is the preparation mentioned for use as a styptic after excision of the tonsils or ablation of the uvula.

5. **Gargarisma Aluminis cum Acido Tannico.**

R. Aluminis,					
Acidi Tannici	...	...	...	...	gr. 60.
Aquæ	...	...	...	...	ad fl. 5x.

Misce.

Use.—Astringent in ordinary relaxation and congestion of the faucees.

6. **Gargarisma Boracis.**

R. Glycerini Boracis...	...	...	fl. 5ss.	ad 5jss.
Aquæ	...	...	...	ad fl. 5x.

Misce.

Use.—Mildly alkaline and astringent.

7. **Gargarisma Hydrargyri Perchloridi.**

R. Liquoris Hydrargyri Perchloridi.	fl. 5iii.	ad 5v.
Aquæ	...	...

Misce.

Use.—Stimulant. In syphilis.

8. **Gargarisma Potassæ Chloratis.**

R. Potassæ Chloratis	...	gr. 90	ad gr. 120.
Glycerini...	...	...	fl. 5ij.
Aquæ	...	...	ad fl. 5x.

Misce.

Use.—Antiseptic. Useful in disorder of the follicular secretion.

9. **Gargarisma Potassæ Permanganatis, T.H.P.**

R. Liquoris Potassæ Permanganatis . . . (B.P.) fl. ʒj.

Aquæ distillatæ ad fl. ʒx.

Misec.

Use.—Antiseptic. In the same proportions, but at a temperature of 90° to 95° F., this gargle may be used as a nasal douche.

10. **Gargarisma "Sanitas."**

R. "Sanitas" (page 165) fl. ʒss.

Aquæ ad fl. ʒx.

Misec.

Use.—Antiseptic, or as above for a nasal douche.

TROCHISCI—LOZENGES. Page 55.11. **Trochisci Astringentes Effervescentes.**

These were made, at the suggestion of the author, by Mr. Cooper, of Oxford-street (see *British Medical Journal*, Jan. 24th, 1874). Each lozenge contains 1 grain of Eucalyptus and a small quantity of powdered squill, combined with the ingredients of Cooper's well-known effervescent lozenge.

Use.—Astringent and sialagogue. Most useful as voice lozenges. One, or a portion of one, should be taken before use of voice.

12. **Trochisci Althææ.**

The ordinary Guimauve lozenge of commerce.

Use.—Emollient. Valuable after excision of tonsils or uvula, leaving as they do a soft pultaceous layer over the raw surface.

13. **Trochisci Acidi Carbolici, T.H.P.**

Each lozenge contains about 1 grain of carbolic acid, and is marked C. A.

Use.—Antiseptic and stimulant. Servicable in pharyngitis sicca.

14. **Trochisci Eucalypti Compositi.**

Originally manufactured for the author by Corbyn, Stacey, & Co. Each lozenge contains 2 grains of chlorate of potash, 1 gr. of extract of Eucalyptus rostrata, $\frac{1}{4}$ grain of powdered cubeb, with acid fruit paste, and is marked C. E.

Use.—Largely employed by the author for the joint astringent, sialagogue, and expectorant action of the various ingredients; and preferable to many lozenges containing but one active agent.

15. **Trochisci Guaiaci, T.H.P.**

Each lozenge contains 2 grains of Guaiacum, and is marked G.

Use.—In acute inflammation of the tonsils and fauces.

16. **Trochisci Morphiæ et Ipecacuanhæ, B.P.**

Each lozenge contains $\frac{1}{30}$ grain of Hydrochlorate of Morphia and $\frac{1}{12}$ grain of Ipecacuanha.

Use.—For allaying irritable cough, and assisting expectoration in laryngeal and bronchial catarrh.

17. **Trochisci Krameriæ, T.H.P.**

Each lozenge contains 3 grains of Extract of Rhatany, and is marked R. Useful when an astringent only is required. In the practice of the author, the Compound Encalyptus lozenge is usually substituted.

18. **Trochisci Potassæ Chloratis Effervescentes (Cooper).**

Each contains 3 grains of Chlorate of Potash.

Use.—Antiseptic, stimulant, and sialagogue. Most useful in cases of fetid breath, dependent on pharyngeal and laryngeal disease. They are but of little use where the disease is situated in the nasal passages.

19. **Trochisci Sedativi, T.H.P.**

Each lozenge contains $\frac{1}{10}$ grain of Extract of Opium, and is marked S.

Use.—Sedative in irritative coughs and painful conditions of the pharynx and larynx.

VAPORES—INHALATIONS. Page 56.

A.—STEAM INHALATIONS.

20. **Vapor Amyl Nitritis, T.H.P.**

℞ Amyl Nitritis	...	...	...	...	fl. ʒj.
Spiritūs rectificati	...	...	...	ad fl. ʒij.	

Misce.

A teaspoonful in a pint of water at 100° F. for each inhalation, or on a cone of blotting-paper.

Use.—Anti-spasmodic. Valuable in some cases of asthma and spasm of the glottis.

21. **Vapor Ammoniæ, T.H.P.**

℞ Liquoris Ammoniæ	...	(B. P. sp. gr. .959)
Aquaæ	...	... $\bar{a}\bar{a}$ fl. $\frac{1}{2}$ ss.
Misce.		

A teaspoonful in a pint of water at 100° to 120° F. for each inhalation.

Use.—Stimulant; useful in chronic laryngitis, functional aphonia, and in some cases of post-nasal disease extending along the Eustachian tubes. Various essential oils may with advantage be combined with this inhalation.

22. **Vapor Benzoini, T.H.P.**

℞ Tincturæ Benzoini Compositæ	...	fl. $\frac{1}{2}$ ij.
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A teaspoonful in a pint of water at 130° to 150° F. for each inhalation.

Use.—A valuable sedative in acute inflammations of pharynx and larynx.

23. **Vapor Benzoini c. Chloroformo.**

℞ Tincturæ Benzoini Compositæ	...	fl. $\frac{1}{2}$ ij.
Chloroformi	...	\mathfrak{m} xxv.
Misce.		

A teaspoonful in a pint of water at 140° F. for each inhalation.

Use.—Sedative.

24. **Vapor Benzoini c. Oleo Pini Sylvestris.**

℞ Tincturæ Benzoini Compositæ...	...	fl. $\frac{1}{2}$ xxij.
Olei Pini Sylvestris	...	fl. $\frac{1}{2}$ ij.
Misce.		

A teaspoonful in a pint of water at 140° F. for each inhalation.

Use.—Mildly stimulant. Of service in the mucous stage of inflammation of the pharynx or larynx.

25. **Vapor Benzolis.**

℞ Benzoli	...	...	...	...	fl. $\frac{1}{2}$ ij.
Olei Cassiæ...	...	...	...	...	\mathfrak{m} vij.
Magnesiæ Carbonatis Levis	...	...	...	...	gr. 60.
Aquaæ	...	...	...	...	ad fl. $\frac{1}{2}$ ij.

Misce.

A teaspoonful in a pint of water at 140° F. for each inhalation.

Use.—Similar to Benzoin, but rather more stimulating. Employed in hospital practice on account of the lessened cost.

26. Vapor Benzolis c. Aldehyde.

R. Vapor Benzoli	...	...	...	...	fl. ʒij.
Aldehyde	...	...	...	...	fl. ʒss.

Misce.

A teaspoonful in a pint of water at 140° F. for each inhalation.

Use.—Stimulant. In cases of arrested mucous secretion.

27. Vapor Conii, T.H.P.

R. Sodaæ Carbonatis Exsiccatæ	...	...	gr. 20.
Aquaæ (140° F.)	...	...	fl. ʒxx.
Solve et adde			
Succi Conii	...	...	fl. ʒij.

The vapour to be inhaled.

Use.—Sedative.

28. Vapor Creasoti.

R. Creasoti	...	...	...	...	fl. ʒss.
Magnesiaæ Carbonatis Levis					gr. 90.
Aquaæ	...	...	...	ad fl. ʒij.	

Misce.

A teaspoonful in a pint of water at 140° F. for each inhalation.

Use.—Stimulant. In chronic congestion of larynx and in ozaena.

29. Vapor Lupuli.

R. Extracti Lupuli	...	...	...	...	gr. 60.
(Treated as for conium inhalation, formula 27.)					

Use.—Sedative. Especially useful in laryngeal phthisis and cancer.

The vapour of oil of hops, as recommended in the Throat Hospital pharmacopœia, is very irritating, and far from sedative. Although inconvenient on account of its bulk, the old inhalation prepared by macerating hops in hot water was much more soothing.

30. **Vapor Pini Sylvestris, T.H.P.**

R. Pini Sylvestris	...	...	...	fl. $\frac{3}{4}$ j.
Mag. Carb. levis	...	...	...	gr. 60.
Aquæ	...	...	...	ad fl. $\frac{3}{4}$ j.

Misce.

A teaspoonful in a pint of water at 140° F. for each inhalation.

Use.—A mild but useful stimulant and resolvent.31. **Vapor Pini Sylvestris c. Camphoræ.**

Ut supra cum Camphoræ	gr. 5.
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Use.—More stimulant than the foregoing.

B. ATOMIZED FLUID INHALATIONS. Page 58.

These are most useful in pharyngeal and nasal diseases.

32. **Vapor Potassæ Permanganatis, T.H.P.**

R. Potassæ Permanganatis	...	...	...	gr. v.
Aquæ destillatæ	...	...	...	fl. $\frac{3}{4}$ j.

Solve.

Use.—Antiseptic.33. **Vapor Acidi Carbolici, T.H.P.**

R. Acidi Carbolici	...	...	...	gr. 3.
Aquæ destillatæ	...	...	...	fl. $\frac{3}{4}$ j.

Solve.

Use.—Stimulant and antiseptic, where there is deficient mucous secretion.34. **Vapor Acidi Lactici, T.H.P.**

R. Acidi Lactici	...	...	...	...	mlxx.
Aquæ destillatæ	...	...	...	...	fl. $\frac{3}{4}$ j.

Misce.

Use.—Of great service in diphtheria; it appears to have the effect of dissolving the membranous exudation.35. **Vapor Calcis, T.H.P.**

R. Liquoris Calcis, q.s.				
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Use.—Of some repute as a resolvent in Diphtheria.36. **Vapor Morphiæ Bi-Meconatis.**

R. Liq. Morph. Bi-Meconatis (Squire)	...	...	mlv.
Aquæ	...	...	fl. $\frac{3}{4}$ ss.

For each inhalation.

Use.—edative.

PIGMENTA—FLUIDS FOR EXTERNAL AND INTERNAL APPLICATION.

A. EXTERNAL. Page 61.

37. **Liquor Epispasticus, B.P.**
 38. **Linimentum Iodi, B.P.**
 39. **Tinctura Iodi, B.P.**
 40. **Linimentum Sinapis Compositum, B.P.**
 41. **Pigmentum Chloralis et Camphoræ.**
 ʒ Camphoræ (reduced to fine powder with a few drops of rectified spirit),
 Chloralis Hydrati ʒss.
 Misce bene.

This preparation, which is of American origin, was introduced to the profession in England mainly by the author in 1874. (See *British Medical Journal*, March 7th, 1874.)

Use.—Employed as an external anaesthetic in neuralgic affections of the throat, and indeed for any purpose in which pain may be relieved by external means.

B. INTERNAL. Page 65.

42. **Pigmentum Acidi Carbolici.**
 15 grs. to 30 grs. in the ounce of distilled water.
 43. **Pigmentum Argenti Nitratis.** See page 202.
 10 grs. to 60 grs. in the fluid ounce of distilled water.
 44. **Pigmentum Cupri Sulphatis.**
 10 grs. to 20 grs. in the fluid ounce of distilled water.
 45. **Pigmentum Ferri Perchloridi.**
 20 grs. to 90 grs. in the fluid ounce of distilled water.
 46. **Pigmentum Iodoformi.**

ʒ Iodoformi ʒj.
 Ȑetheris Communis ad ʒj.

Use.—This application was brought under the author's notice by Dr. R. C. Brandeis, of Louisville, who, having seen its good effects in granular inflammations about the uterus, was led to try it for similar throat affections. It is most useful in reducing naso-pharyngeal congestions and in granular pharyngitis (vide *Brit. Med. Journ.*, Feb. 9, 1878).

47. **Pigmentum Zincii Chloridi.**
 10 grs. to 30 grs. in the ounce of distilled water.

COLLUNARIA—NASAL DOUCHES.

Page 64 and page 163.

These preparations may be used with either the anterior or posterior nasal douche. Ten ounces will usually be found a sufficient quantity to use at one time, and more than a pint should never be used. In the use of the anterior nasal douche on the siphon principle, the vessel containing the fluid should not be placed much above the patient's head, or the current will descend with too great force. In cases of post-nasal catarrh, and in cases in which use of the anterior nasal douche seems to cause aural trouble, or where there is a more than usually tenacious secretion requiring removal, the posterior nasal douche will be found superior to the anterior.

All nasal douches should be used at a temperature of about 95° F.

48. Collunarium Acidi Carbolici.

R. Glycerini Acidi Carbolici	...	...	...	fl. 5 <i>j.</i>
Aquaæ	...	...	...	ad fl. 5 <i>x.</i>
Misce.				

Use.—Antiseptic and detergent.

49. Collunarium Potassæ Permanganatis, T.H.P.

R. Liquoris Potassæ Permanganatis	...	...	...	fl. 5 <i>j.</i>
Aquaæ	...	...	...	ad fl. 5 <i>x.</i>
Misce.				

Use.—Detergent.

50. Collunarium "Sanitas."

R. "Sanitas"	...	...	...	fl. 5 <i>ij.</i> to 5 <i>iv.</i>
Aquaæ (at 95°)	...	...	...	fl. 5 <i>x.</i>
Misce.				

Use.—Antiseptic and detergent.

51. Collunarium Zinci Sulpho-carbolatis, T.H.P.

R. Zinei Sulpho-carbolatis	...	...	...	gr. 20.
Aquaæ	...	...	...	fl. 5 <i>x.</i>
Solve.				

Use.—Antiseptic.

MISTURÆ—MIXTURES.

Only mixtures having some special use are here given.

52. **Mistura Aconiti.**

R. Tincturæ Aconiti	...	...	...	...	5j.
Aquaæ	...	...	...	...	ad $\frac{5}{3}$ viij.
Miscæ.					

A teaspoonful for a dose, to be given every half-hour; when the skin becomes moist, and the heart's action lowered, the intervals should be increased.

Use.—Of great value in reducing temperature and pulse in early stages of inflammatory affections, tonsillitis, &c.

53. **Mistura Ammonii Chloridi c. Opio.**

R. Ammonii Chloridi	...	...	...	...	gr. 20.
Tincturæ Opii	...	...	...	...	mlv.
Decocti Cinchonæ	...	...	...	ad fl. $\frac{5}{3}$ j.	*
Miscæ.					

To be taken at eleven and four, and between meals.

Use.—In catarrhal conditions, and in arresting commencing head colds. It may often be advisable to omit the opium, or sometimes to give the opium only.

54. **Mistura Expectorans.**

R. Tincturæ Scillæ	...	...	...	...	mlx.
Ammoniaæ Carbonatis	...	...	...	...	mlv.
Tincturæ Camphoræ Composite	...	...	...	...	mlxv.
Syrnpi Zingiberis	...	...	...	...	fl. $\frac{5}{3}$ j.
Infusi Serpentariae	...	...	...	ad fl. $\frac{5}{3}$ j.	

Misce.

Use.—A good expectorant mixture.

55. **Mistura Hydrargyri Iodidi.**

R. Hydrargyri Perchloridi	...	...	...	...	gr. j.
Potassii Iodidi	...	...	...	...	gr. 60.
Tincturæ Cinchonæ	...	...	...	...	fl. $\frac{5}{3}$ iv.

Misce.

Dose.—One to two teaspoonsfuls thrice daily.

Use.—In tertiary syphilis.

56. **Mistura Hydrargyri Perchloridi.**

R. Hydrargyri Perchloridi	...	...	gr. $\frac{1}{3}$ j. ad $\frac{1}{2}$ j.
Decocti Cinchonæ	...	...	...

Misce.

Use.—In tertiary syphilis.

57. **Mistura Potassii Bromidi.**

℞ Potass. Bromidi	...	...	gr. 10 to gr. 30	.
Aquaæ Camphoræ	...	...	...	fl. ʒj.
Misce.				

58. **Mistura Potassii Iodidi.**

℞ Potassii Iodidi	...	...	gr. 3 to gr. 10.	
Spiritu Ammoniæ Aromaticæ	...	...	ℳxx.	
Infusi Gentianæ Compositi	...	...	ad fl. ʒj.	
Misce.				

Use.—In tertiary syphilitic affections, &c. Iodide of Sodium, in the same or smaller doses, may be substituted for the Potassium Salt in those cases in which coryza results from use of the latter.

59. **Mistura Salina Aperiens.**

℞ Potassæ Nitratis	...	...	...	gr. 20.
Magnesiaæ Sulphatis	...	...	...	fl. ʒj.
Ætheris Nitrosi Spiritu	...	...	...	ℳxx.
Aquaæ Camphoræ	...	...	...	ad fl. ʒj.
Misce.				

Use.—A good aperient for the commencement of many affections of an inflammatory character.

60. **Mistura Salina Aperiens c. Ferro.**

℞ Ferri Sulphatis	...	...	...	gr. 2.
Mistura Salinæ Aperientis	...	...	...	ʒj.
Misce.				

Use.—Combined aperient and tonic. The combination increases the action of both.

61. **Mistura Soda c. Gentianæ.**

℞ Soda Bicarbonatis	...	...	...	gr. 25.
Spiritu Ammoniæ Aromatici	...	...	...	ℳxx.
Infusi Gentianæ Compositi	...	...	...	ad ʒj.
Misce.				

Use.—Very valuable where there is dyspepsia and digestive disturbance, as in chronic pharyngeal inflammations; and a good alkaline vegetable tonic after recovery from quinsy, &c.

62. **Mistura Soda Salicylatis.**

℞ Soda Salicylatis	...	...	gr. 15 ad gr. 25.	
Syrupi	...	...	...	fl. ʒj.
Aquaæ	...	...	...	fl. ʒj.
Misce.				

Dose.—Every hour or two until pain is relieved.

Use.—In tonsillitis, where there is simultaneous general rheumatism with hyperpyrexia.

63. **Mistura Tonica.**

R. Ammoniae Carbonatis	...	...	...	gr. 5.
Infusi Quassiae	...	...	...	fl. $\frac{3}{4}$.
Misce.				

Use.—Simple bitter tonic.

64. **Mistura Tonica c. Ferro.**

R. Liquoris Ferri Perchloridi	...	...	mlx. to mlxx.
Misturæ Tonicae	...	...	ad fl. $\frac{3}{4}$.
Misce.			

With this mixture saline aperients may be advantageously combined.

PILULÆ—PILLS.

65. **Pilula Expectorans.**

R. Pilulæ Scillæ Compositæ	...	...	...	gr. 4.
Pulveris Doveri	...	...	...	gr. 2.
Pilulæ Rhei Compositæ	...	...	...	gr. 3.

M. ft. pil. ij.—Two pills to be given night and morning, and, if necessary, one or two also at intervals in the day.

Use.—These pills, which are very similar to some well known as prescribed by Dr. Billing, are most valuable in cases of loss of singing voice from simple catarrhal causes.

66. **Pilula Hydrargyri Subchloridi Composita, B.P.**

Use.—In secondary syphilitic affections of the throat.

67. **Pilula Hydrargyri Bi-cyanidi, T.H.P.**

Each pill contains $\frac{1}{10}$ grain of Bi-cyanide of Mercury, with sugar of milk and mucilage.

Dose.—One twice a day.

Use.—In tertiary syphilitic affections. Also reputed to be of value in arresting quinsy.

68. **Pilula Hydrargyri Iodidi Viridis.**

R. Hydrargyri Iodidi Viridis	...	...	gr. $\frac{1}{2}$.
Extracti Haematoxyli	...	...	gr. 2.
Extracti Lactueæ	...	...	gr. 3.

Misce. Fiat pilulam.

69. **Pilula pro Dyspepsiâ.**

℞ Quiniæ,

Aeidi Carbolici,

Extracti Rhei aa gr. $\frac{1}{2}$.Pepsinæ Porci (Bullock's) gr. $2\frac{1}{2}$.

Misce. Fiat pilulam.

Dose.—One before each meal at which meat is taken.*Use.*—Valuable in sluggish digestions with flatulence, and especially serviceable for vocalists, actors, and all speakers in whom the digestive function is frequently impeded by nervousness.

VARIÆ—VARIOUS.

70. **Application for Nostrils.**

℞ Acidi Carbolici gr. 2.

Iodini gr. 3.

Atropini gr. $\frac{1}{2}$.Vaselini ad $\frac{3}{4}$ j.*To be applied with a camel-hair brush to nostrils, and then drawn up by full nasal inspiration.**Use.*—Very valuable in cases of inflammatory hypertrophy of mucous membrane, in ulceration, &c., of the nostrils. It is also much used by the author in eczematous conditions of the ear.71. **Linctus Expectorans.**℞ Oxymellis Scillæ fl. $\frac{3}{4}$ iss.Tincturæ Camphoræ Compositæ fl. $\frac{3}{4}$ vj.Spiritūs Ammoniæ Aromatici fl. $\frac{3}{4}$ ss.Vini Ipecacuanhæ fl. $\frac{3}{4}$ j.*Misce.*—A teaspoonful for a dose.72. **Linctus Sedativus.**℞ Tincturæ Opii fl. $\frac{3}{4}$ j.Acidi Sulphurici diluti fl. $\frac{3}{4}$ iss.Theriacæ ad fl. $\frac{3}{4}$ j.*Misce.*73. **Perles Camphoræ Mono-bromidi (Tisy).**

These perles (sold by Corbyn & Co.) contain 3 grains of the

active ingredient in hermetically closed gelatine envelopes. They are absolutely tasteless, and not larger than a four-grain pill.

Dose.—One every 2 or 3 hours until pain is relieved. If the temperature becomes lowered, the intervals must be increased.

Use.—In neuralgic affections of the larynx.

74. Perles Ferri Iodidi (Tisy).

The Iodine and Iron are separated in these pills, so that combination only takes place in the stomach itself, and there is no fear of previous decomposition, as with other forms of this valuable remedy. Each perle contains the equivalent of one grain of Iodide of Iron.

Dose.—One three times a day.

75. Granulæ Zinci Phosphidi.

These small pills contain $\frac{1}{10}$ of a grain of Phosphide of Zinc, and in the author's experience are quite equal in effect, and less likely to produce eructations than the pure phosphorus metal in capsules.

Dose.—One three times a day.

76. Anti-catarrhal Smelling Salts.

R. Acidi Carbolici	...	...	...	...	gr. 30.
Ammoniæ Carbonatis	...	...	...	...	ʒj.
Pulveris Carbonis Ligni	...	...	...	...	ʒj.
Olei Lavendulæ	...	...	...	...	mlxx.
Tincturæ Benzoini Compositæ	...	...	...	...	fl. ʒss.

Misce.

The above mixture was made as the result of analysis of a well-known patent remedy for colds in the head, and is very efficacious in certain catarrhal conditions of the naso-pharynx.

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PLATES.

THE Illustrations are so arranged that they can be studied during perusal of the text, referring to them without the inconvenience of constantly turning the leaves.

For this purpose it is necessary only to unfold the Plate, and it will then lie beside the letter-press.

A short description of each figure is given on the page corresponding to the Illustration.

- I. VARIETIES OF THE NORMAL LARYNX AS SEEN IN THE MIRROR.
- II. ACUTE, SUBACUTE, AND CHRONIC PHARYNGITIS.
- III. SYPHILITIC DISEASE OF THE PHARYNX.
- IV. DISEASES OF THE UVULA AND TONSILS.
- V. ACUTE TONSILLITIS—PHARYNGITIS SICCA—THE RHINOSCOPIC IMAGE AND DISEASES OF THE POSTERIOR NARES—DIPHTHERIA.
- VI. SIMPLE INFLAMMATIONS OF THE LARYNX—TRAUMATIC LARYNGITIS—DIPHTHERIA.
- VII. SYPHILITIC LARYNGITIS.
- VIII. ANAEMIA OF THE LARYNX—TUBERCULAR LARYNGITIS—DISEASE OF THE LARYNGEAL CARTILAGES.
- IX. BENIGN NEOPLASMS IN THE LARYNX—MALIGNANT DISEASE OF THE PHARYNGO-LARYNX AND LARYNX.
- X. NEUROSES OF THE LARYNX.

PLATE I.

VARIETIES OF THE NORMAL LARYNX AS SEEN IN THE MIRROR.

Fig. 1 represents the appearance, so far as form is concerned, of a typical larynx in the act of deep inspiration; and fig. 2 in that of ordinary phonation. The other figures illustrate variations in conformation of different portions. (Pages 31 to 36.)

As stated in the text, no attempt has been made at coloration, either in this plate or in Plate X., since the tint of mucous membrane in different individuals is as various in grade as is the complexion of the skin.

- A.C.—Anterior Commissure of the Vocal Cords.
- L.G.E.F.—Lateral Glosso-Epiglottic fold.
- S.G.E.F.—Superior Glosso-Epiglottic fold.
- T.E.F.—Thyro-Epiglottic fold.
- P.E.F.—Pharyngo-Epiglottic fold.
- A.E.F.—Ary-Epiglottic fold.
- S.S.E.—Superior Surface of Epiglottis.
- I.S.E.—Inferior Surface of Epiglottis.
- C.E.—Cushion of Epiglottis.
- L.E.—Lip or free Edge of Epiglottis.
- V.B.—Ventricular Bands—formerly called false vocal cords.
- V.M.—Ventricle of Morgagni.
- F.I.—Fossa Innominate.
- C.W.—Cartilage of Wrisberg.
- C.S.—Capitulum of Santorini.
- I.A.F.—Inter-Arytenoid fold.
- P.C.—Posterior Commissure of the Vocal Cords.
- V.C.—Vocal Cords.
- C.C.—Cricoid Cartilage.
- T.—Trachea.
- R.B.—Right Bronchus.
- L.B.—Left Bronchus.
- H.F.—Hyoid Fossa.
- C.H.—Cornu of Hyoid Bone.

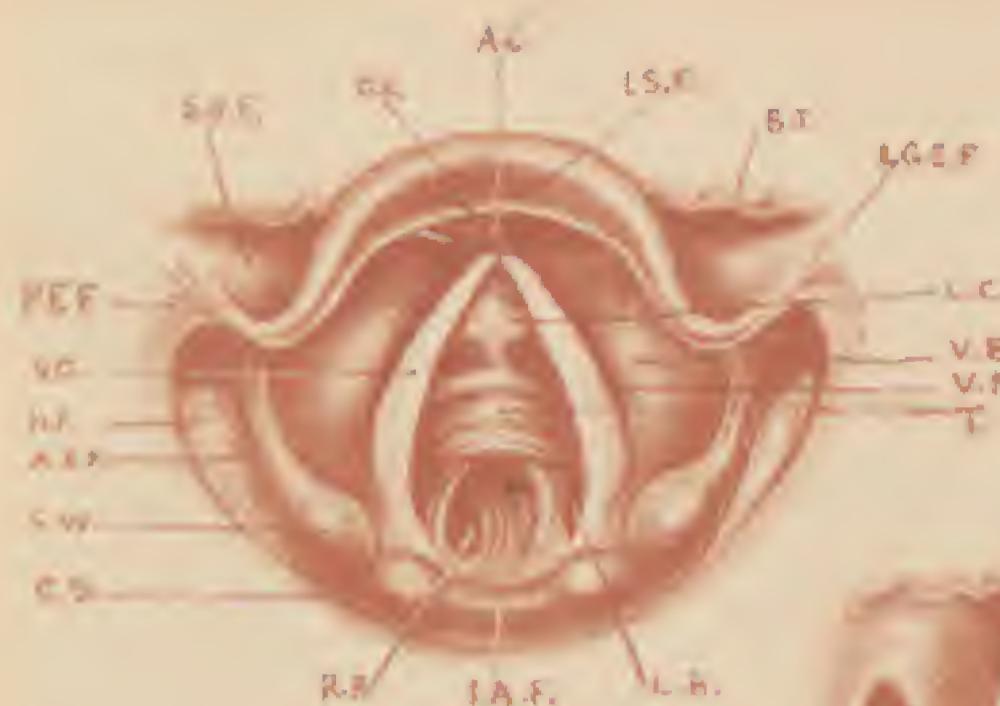


Fig. 1.

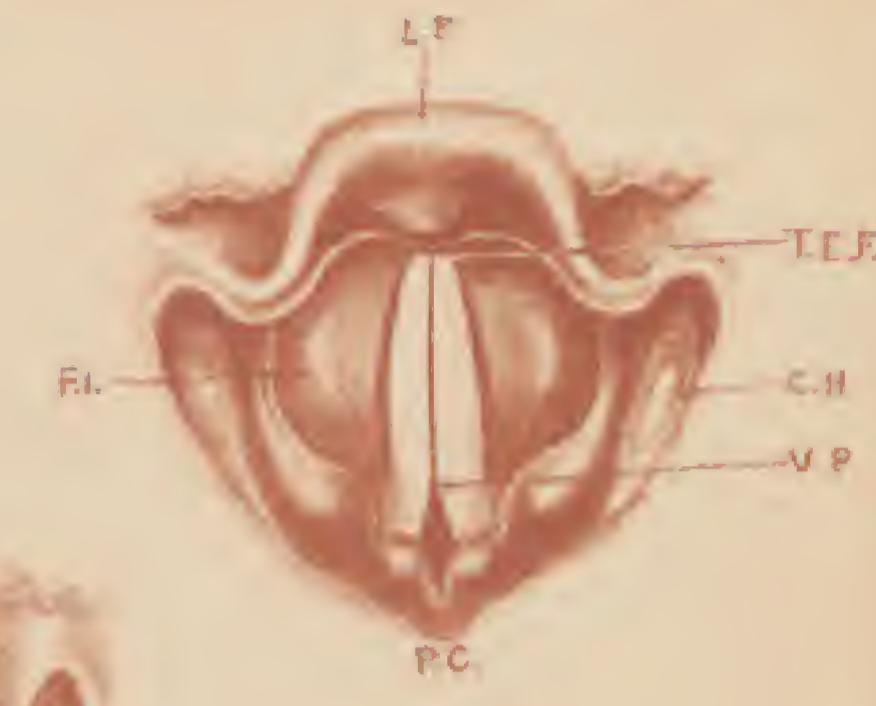


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.

Linnæus, 1758, 1760, 1761.

Autotype

PLATE II.

DISEASES OF THE FAUCES AND PHARYNX.

Fig. 12.—Acute inflammation of the fauces and pharynx. (Page 89.)

Fig. 13.—Subacute inflammation of fauces, occurring in a gentleman, æt. 42, of arthritic diathesis and prone to excess in stimulants and tobacco-smoking. (Page 95.)

Fig. 14.—Chronic relaxation of velum with congestion of the pillars of fauces. The thinning of the mucous membrane of the velum, without much relaxation of the uvula, is also here indicated. (Page 126.)

Fig. 15. Strumous thickening of fauces with similar disease in the naso-pharynx. Exact size of arch of soft palate in the patient, æt. 17, to whom allusion is made at page 167. The rhinoscopic image is shown in Fig. 41, Plate V.

Fig. 16.—Subacute inflammation of pharynx with pustular eruption of chicken-pox (page 95). This drawing was taken from a young lady, æt. 20, seen October 15, 1877, in consultation with Mr. Henry Bullock.

Fig. 17.—Secondary outgrowth from velum, the result of tertiary ulceration. That on the right of the centre line is the true uvula considerably relaxed. (Page 111.)

Fig. 18.—Chronic pharyngitis with venous congestion and glandular hypertrophy—occurring in a professional vocalist (tenor), æt. 26. The varicose veins were intercepted at five points by galvano-eaustic application (October 18th, 1877). The granular condition at once subsided and the patient regained his singing voice. (Pages 99, 100.)

Fig. 19.—A similar condition, of much longer standing, occurring in a lady's-maid, æt. 35. Cured by similar treatment February, 1877. Seen to have remained well in the following November. (Pages 99, 100.)



Fig. 12.



Fig. 13.



Fig. 14.



Fig. 15.



Fig. 16.



Fig. 17.



Fig. 18.



Fig. 19.

Brain from nature and outline. by Leamy Moore
1870

PLATE III.

SYPHILITIC DISEASE OF THE PHARYNX.

Fig. 20.—Secondary congestion and mucous patches on velum and uvula—drawn from a female, æt. 23, married five years, and having a healthy child nine months old. Primary infection probably five or six months previously. (Page 104.)

Fig. 21.—Secondary congestive patches with two small symmetrical condylomata at edge of posterior pillars; drawn October 18, 1877, from a female patient, æt. 21. Squamous eruption on skin. Primary disease probably six or eight months previously. (Page 104.)

Fig. 22.—Secondary congestion with characteristic raised mucous patches on fauces and tonsils, drawn September 24, 1871, from a married female patient, æt. 28. (Page 104.)

Fig. 23.—A typical case of secondary congestion with strikingly symmetrical mucous patches; drawn February, 1874, from a male patient, W. W., æt. 23, who had been primarily infected six months previously. (Page 104.)

Fig. 24.—Tertiary ulceration of right side of pharynx and velum, and of posterior wall of pharynx; drawn from H. F., an engine-driver, æt. 27, who had been primarily infected three and a half years previously. (Page 107.) In this patient there was also paralysis of the abductor of the left vocal cord.

Fig. 25.—Active tertiary ulceration of posterior pharyngeal wall, with old cicatrices and cicatricial outgrowth; drawn from Catherine P., æt. 41, who had suffered from sore throat for more than seven years. (Page 111.)

Fig. 26.—Old perforating ulcers of velum and of right side of pharynx, with cicatricial outgrowth in the latter situation. The puckered condition of the velum around the central perforation well illustrates nature's attempt to close off the passage to the posterior nares. (Page 111.) The laryngeal condition of this patient, Edward F., æt. 53, is delineated in Fig. 56, Plate VIII.

Fig. 27.—Congenital tertiary ulceration; taken from a female patient, æt. 15, March, 1874, who had suffered also from double interstitial keratitis, for which iridectomy had been performed on one eye. (Page 111.)



Fig. 20.



Fig. 21.



Fig. 22.



Fig. 23.



Fig. 24.



Fig. 25.



Fig. 26.



Fig. 27.

Drawn from nature, and colored by Leucophoresis.

PLATE IV.

DISEASES OF THE UVULA AND TONSILS.

Fig. 28.—Acute œdema of uvula. (Page 123.)

Fig. 29.—Chronic inflammation of uvula with relaxed mucous membrane, which is seen to be slightly bifurcated. (Page 126.) Drawn from W. P., æt. 31, painter, July 11, 1877.

Fig. 30.—Warty growth attached by long membranous pedicle to uvula, and causing severe dyspncea; removed December 4, 1876, with immediate relief. (Page 129.)

Fig. 31.—Acute follicular inflammation (quinsy) of left tonsil on the fourth day. The uvula is seen characteristically lying on swollen gland. (Page 130.)

Fig. 32.—Chronic scrofulous hypertrophy of tonsils, occurring in a lad, æt. 17, sent for operation by Dr. Dobell. The uvula is also relaxed and rather nodular. (Pp. 142 and 126.)

Fig. 33.—Chronic inflammatory hypertrophy of tonsils, the result of repeated attacks (twelve) of quinsy; occurring in a male patient, æt. 31. (Page 142.)

Fig. 34.—Carcinoma of tongue invading left tonsil. (Case alluded to at page 149.)

Fig. 35.—Primary carcinoma of right tonsil. Since writing of this case, at page 149, the patient has died. He lost weight to the extent of 24 lb. in ninety-eight days. Two days before death, which was extremely sudden and the result of haemorrhage, he walked half a mile to and from the hospital.



Fig. 26.



Fig. 27.



Fig. 28.



Fig. 29.



Fig. 30.



Fig. 31.

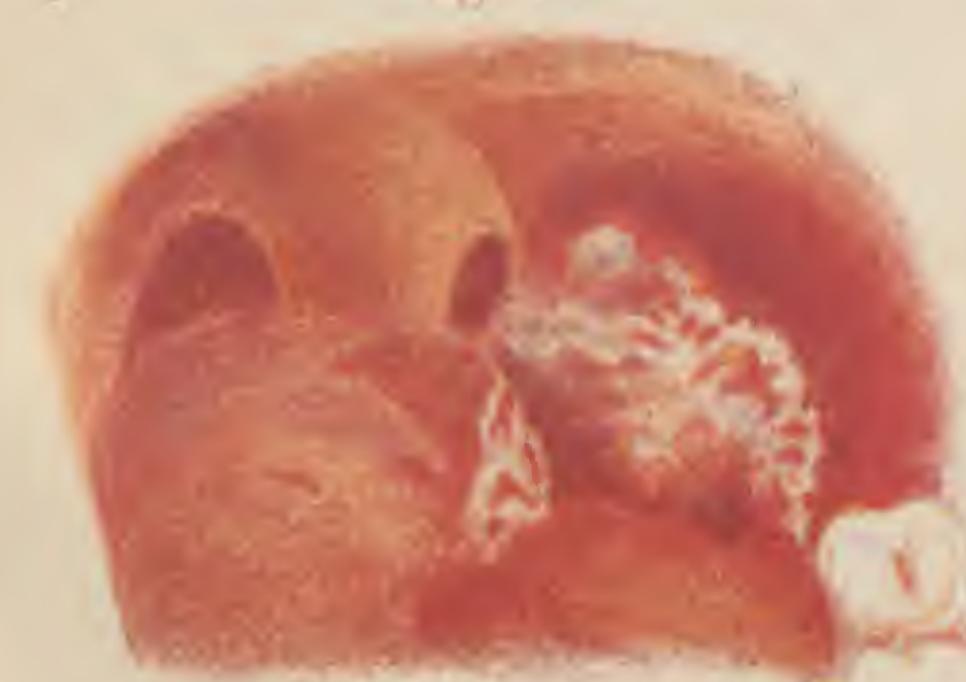


Fig. 32.



Fig. 33.

PLATE V.

ACUTE TONSILLITIS — PHARYNGITIS SICCA — THE RHINOSCOPIC IMAGE AND DISEASES OF THE POSTERIOR NARES — DIPHTHERIA.

Fig. 36.—Acute inflammation with œdema of left tonsil and of uvula, occurring in a gentleman, æt. 22, drawn November 26, 1876. The parents of this patient were first cousins, and the darthous diathesis was strongly evidenced on both sides. The case was treated by aperients with colchicum, and suppuration was arrested. (Pp. 123, 130.)

Fig. 37.—Pharyngitis sicca, with dry post-nasal catarrh and ozoena, occurring in a patient, æt. 27, whose sister also suffered from the same complaint. (Pp. 101 and 153.) It is very difficult to represent the dry glazed condition of the posterior pharyngeal wall, and the attempt to do so has been but partially successful.

Fig. 38.—The normal rhinoscopic image. (Page 37.)

Fig. 39.—Tertiary ulceration of the posterior nares, in which case there was also entire destruction of the soft palate, and ulceration of the covering of the whole of the roof of the mouth. A Eustachian catheter introduced into the anterior nostril in the ordinary way is seen making its exit, and indicates how much normal tissue has been destroyed. (Page 158.)

Fig. 40.—Tertiary ulcerations on the posterior wall of the velum prior to perforation on the buccal surface. (Page 108.)

Fig. 41.—Rhinoscopic image of case, the faucial appearance of which is depicted in fig. 15. In this view the granulations at the vault of the pharynx and the new growth on each side of the vomer are depicted. (Page 157.)

Fig. 42.—Diphtheria, occurring in a child, æt. 4 years. The right side of the throat was first attacked, and the false membrane in this situation is seen to be of a brownish hue, while that more recently exuded on the left tonsil and uvula is of characteristic greyish-white colour. At the lower portion of the left tonsil a bleeding ulcerated patch may be noticed, from which the membrane had just been removed. The laryngeal appearance, taken at the same time, is depicted in Fig. 55, Plate VI. (Page 171.)

Fig. 43.—The rhinoscopic image of the same patient forty-eight hours later. (Page 172.) This view was taken very shortly after death.



Fig. 36.



Fig. 37.



Fig. 38.



Fig. 39.



Fig. 40.



Fig. 41.



Fig. 42.



Fig. 43.

Drawn from nature and outlined by Lemmy Brown

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PLATE VI.

SIMPLE INFLAMMATIONS OF THE LARYNX, &c.

Fig. 44.—Acute inflammation of the larynx.—General œdema. (Page 186.) Such an amount of œdema is seldom seen in one case, unless it be the result of inflammation following typhus or other similar toxic cause. More generally the epiglottis or one aryepiglottic fold is infiltrated, as in

Fig. 45.—Œdema of right side of epiglottis and right aryepiglottic fold.

Fig. 46.—The same twelve hours after scarification. (Page 190.)

Fig. 47.—Infra-glottic œdema. This condition is generally at first the result of acute inflammation, but it is also seen to last much longer than when occurring above the vocal cords. When it thus assumes a subacute or chronic form it often gives rise to respiratory symptoms of the gravest nature. (Pp. 190 and 193.)

Fig. 48.—Subacute inflammation of larynx, especially of both vocal cords. (Page 193.)

Fig. 49.—Subacute inflammation of right ventricular band and of epiglottis. (Page 193.)

Fig. 50.—Chronic inflammation of right vocal cord, showing the vocal process to stand out as a white prominence. (Page 196.)

Fig. 51.—Subacute inflammation of the larynx with pustules of chicken-pox, occurring in the patient whose pharyngeal condition under similar circumstances is depicted in Fig. 16, Plate II. (Page 194.)

Fig. 52.—Chronic laryngitis, with congestion of the vocal cords and arytenoid cartilages, and superficial ulceration of the cords at the vocal process. This drawing was made from the larynx of a clergyman engaged also in a school, aet. 30, who had been hoarse on and off for six years. Local treatment with complete rest of the voice for eight months effected a cure of the congestion and ulceration, but the voice, although rendered serviceable, never regained purity of tone. (Page 196.)

Fig. 53.—Glandular laryngitis, also occurring in a young clergyman of very delicate family history, but without any defined pulmonary disease. He passed two winters abroad with great benefit, and the larynx improved, but the catarrhal tendency remained, and was easily excited to recur. (Page 196.)

Fig. 54.—Traumatic subacute laryngitis from a somewhat common cause, namely, lodgment of a foreign body—in this instance a pin—in the right hyoid fossa.

Fig. 55.—Diphtheria in the larynx, taken from the same case as that which illustrates the appearance in the pharynx and posterior nares (Figs. 42 and 43, Plate V.).



Fig. 44.



Fig. 45.



Fig. 46.



Fig. 47.



Fig. 48.



Fig. 49.



Fig. 50.



Fig. 51.



Fig. 52.



Fig. 53.



Fig. 54.



Fig. 55.

Drawn from nature and outlined by Henry Braine

PLATE VII.

SYPHILITIC LARYNGITIS.

Fig. 56.—Secondary syphilis in larynx, with mucus patches on the epiglottis and in the inter-arytenoid fold. The mottled appearance of the vocal cords may be observed in this and the following figure. (Page 208.)

Fig. 57.—Secondary syphilitic congestion of the vocal cords with unevenness of outline hardly amounting to ulceration, and condylomata in the inter-arytenoid fold. (Page 208.)

Fig. 58.—Syphilitic congestion of larynx, especially of right side, with ulceration, somewhat symmetrical, of the ventricular bands, and of the left vocal cord. Here again is seen a more completely organized new growth in the posterior commissure. (Pp. 207 and 216.)

Fig. 59.—Acute inflammation and ulceration of the right ventricular band and right vocal cord, in a patient long the subject of syphilitic laryngitis, and subject to relapses on reception of catarrhal influences. A new growth is seen beneath the cords at the anterior commissure. (Page 216.)

Fig. 60.—Ulceration of the left lateral glosso-epiglottic and the left pharyngo-epiglottic fold, which occurred in a male patient, *et. 44*, first seen December 8, 1876, who had been married twenty years, and was the father of nine children. The symptoms pointed somewhat to malignant disease, in the appearance of which there is also some resemblance (see Fig. 90, Plate IX.), but under local treatment and iodide of potassium recovery was so rapid and complete as to leave no doubt as to its nature. (Page 271.)

Fig. 61.—Characteristic appearance of epiglottis which has been subject to specific ulceration, to be seen also in figures 65, 66, and 67, with paralysis of right vocal cord from deposit around the arytenoid cartilage. The drawing (made April 6, 1877) represents the larynx in the act of phonation, and the affected cord is seen to be in the cadaveric position (Fig. 92, Plate X.). The patient, *et. 53*, had suffered from a hard sore eighteen years previously. His pharyngeal condition is seen in Fig. 26, Plate III. He had been hoarse for four months, but had no difficulty of breathing except on exertion. (Page 213.)

Fig. 62.—Acute tertiary ulceration of the epiglottis with swelling of the ventricular bands, a small portion of the right vocal cord only being visible.

Fig. 63.—A similar condition but less acute, with typical ulcerations over the arytenoid cartilages. (Page 215.) In both these drawings also the typical character of the thickening of the epiglottis and of the ulceration is marked (Page 215), and comparison should be made with Figs. 44, 73, 74, 75, and 89, where this part is so affected from other causes.

Fig. 64.—Total destruction of the left half of the epiglottis, with paralysis of left vocal cord and outgrowths from the pharyngeal wall. (Page 216.)

Fig. 65.—Stenosis from deposit, with adhesion at the anterior portion of the vocal cords, and in a less degree at the posterior commissure. The patient from whom this drawing was made had tracheotomy performed at a general hospital three years ago, but the tube was removed without a laryngoscopic examination. It is probable that the operation may have to be repeated at no distant date. (Page 219.)

Fig. 66.—Stenosis of the larynx in a patient, *et. 35*, on whom tracheotomy was performed by the author in October, 1875. He has continued wearing the tube with opening in upper wall and with open valve, and pursues his vocation as a broker.

Fig. 67.—Atrophy of left vocal cord following extrusion (after ulceration) of the left arytenoid cartilage. Drawn from a patient, *et. 38*, who had suffered from laryngeal syphilis on and off for ten years.



Fig. 56.



Fig. 57.



Fig. 58.



Fig. 59.



Fig. 60.



Fig. 61.



Fig. 62.



Fig. 63.



Fig. 64.



Fig. 65.



Fig. 66.



Fig. 67.

PLATE VIII.

ANÆMIA OF THE LARYNX—TUBERCULAR LARYNGITIS, &c.

Fig. 68.—Anæmia of the larynx, with feeble adductive power of vocal cords. (Page 226.)

Fig. 69.—Appearance of the right vocal cord twelve hours after a slight haemorrhage from that spot. (Page 225.)

Fig. 70.—An early stage of laryngeal phthisis, showing grey coloration, thickening of mucous membrane over and between arytenoid cartilages, and ulceration comparatively superficial of vocal cords. (Page 226.)

Fig. 71.—Characteristic pyramidal swellings of arytenoid cartilages; commencing degeneration of glands of epiglottis in laryngeal phthisis, in male patient, æt. 28. Consolidation at apices of both lungs. (Page 227.)

Fig. 72.—Similar thickening, especially on right side, with prominence of racemosc glands, and commencement of carious ulceration. At this date there was but slight physical evidence of lung disease.

Fig. 73.—Characteristic ulceration of larynx, especially of epiglottis (on left side of which there is also seen a small false mucous growth), occurring in a male patient, æt. 44, with moist cavities in both apices. (Page 227.)

Fig. 74.—Thickening of epiglottis and arytenoid cartilages in a male patient, the subject of laryngeal phthisis, æt. 36, who had suffered pain in swallowing for eight months; pain in the chest, cough, and hoarseness for four months. Disease at left apex. (P. 227.)

Fig. 75.—Advanced stage (three months later) of case shown in fig. 72. Patient, a lithographer, æt. 37, had now well-marked evidence of a cavity at right apex. The right vocal cord is seen paralyzed; breathing was stridulous, and paroxysms of dyspneal cough frequent. (Page 228.)

Fig. 76.—Appearance of larynx in a patient the subject of laryngeal syphilis, and under observation for over three years, in which phthisis developed in the left lung.

Fig. 77.—Primary perichondritis of the left plate of the cricoid cartilage, leading to the formation of an encysted abscess, which rose as high as the summit of the arytenoid cartilage. The drawing was made from a lady, æt. 65, a patient of Dr. Mackenzie, by the author, who had sole charge of her during the last five or six weeks of her life. The case, which is one of great interest, is fully reported by Dr. Mackenzie in the "Transactions of the Pathological Society," vol. xxi. (Page 236.)

Fig. 78.—Degeneration (believed to be due to gouty or calcareous deposit) of the epiglottis, with symptoms of enlargement of the right crico-arytenoid articulation. The case was that of a gentleman, æt. 62, of confirmed gouty habit. (Page 236.)

Fig. 79.—Perichondritis at the right crico-arytenoid articulation, with formation of infra-glottic abscess and paralysis of right vocal cord, occurring in a maiden lady, æt. 62, with evidence of gouty inflammations in other regions of the body. (Page 237.)



Fig. 68.



Fig. 69.



Fig. 70.



Fig. 71.



Fig. 72.



Fig. 73.



Fig. 74.



Fig. 75.



Fig. 76.



Fig. 77.



Fig. 78.



Fig. 79.

Drawn from nature and outlined by L. M. Barnes

PLATE IX.

BENIGN AND MALIGNANT GROWTHS IN THE LARYNX.

Fig. 80.—Fibro-cellular polypus situated beneath the vocal cords, with some general congestion of the larynx. The growth was removed by means of Gibb's snare, December 5, 1876, from E. A., æt. 22, married, without children, and engaged as an artificial flower maker. After the operation she regained her voice, which had been quite lost for six months. There was a history of syphilis in this case.

Fig. 81.—Papilloma situated in the inter-arytenoid fold, above the level of the vocal cords, and not therefore interfering, except quite occasionally, with the voice. The drawing was taken from a patient, æt. 26, an actor, who had contracted syphilis four years previously, and who suffered from irritable cough, but pursued, and still pursues, his vocation.

Fig. 82.—Papilloma on the left vocal cord, interfering greatly with the voice, which varied from hoarseness to complete aphonia. This growth was removed by Jellenfy's instrument from a male patient, a hawker, æt. 32.

Fig. 83.—Mucous polypus attached by very fine pedicle to the right vocal cord of a bass singer, æt. 30, the patient of Dr. Llewelyn Thomas, who kindly sent him to the author for inspection. The peculiarity of this case was that the growth did not in the least interfere with the singing voice, and the patient was engaged twice daily in choir work. In ex-spiration the growth rested on the superior surface of the vocal cord (*a*), and in deep inspiration could be drawn quite beneath it and out of sight. With quick respiratory movements the polypus could be seen to flap to and fro (*b*). Dr. Thomas successfully dislodged it by a brush.

Fig. 84.—Symmetrical papillomata in the case of Mr. T. F., with syphilitic history. (Page 251.)

Fig. 85.—Papillomata growing from left ventricle and from under surface of right vocal cord, with mucous polypi on under surface of epiglottis and on left ventricular band. The majority of the growths were removed by tubo forceps and a great improvement resulted, when the patient, a man, æt. 38, who had already visited other hospitals, ceased attendance.

Fig. 86.—Fibroma on left vocal cord causing hoarseness in a female patient, a hawker, æt. 38. Applications of astringents (principally iron) were of service in this case, but operative treatment was declined.

Fig. 87.—This drawing is a replica of one figured by the author in Mackenzie's work on growths in the larynx, and is there described as an adenoma. The growth, which was removed by Dr. Mackenzie, "was exhibited by him at the Pathological Society ('Transactions,' vol. xxi.), and referred for investigation to the Morbid Growth Committee. The Sub-Committee appointed to examine the specimen considered it a case of 'adenoid carcinoma,' but the report was not confirmed by the full committee, and does not appear in the 'Transactions.'" It is, however, interesting to add that the patient, in whose case there was also distinct syphilitic history, died of malignant ulceration of the larynx, commencing at the seat of the tumor. The case is here inserted, as it well serves to illustrate the author's proposition at page 254, and also his remarks at page 269.

Fig. 88.—Epithelial pharyngo-laryngeal cancer commencing at the glosso-epiglottic and pharyngo-epiglottic fold, and theno invading the larynx. Necrosis of the cartilages has already commenced. Male patient, æt. 58. (Page 266.)

Fig. 89.—The same disease, distorting the epiglottis and pushing the larynx out of the median line. Male patient, æt. 63.

Fig. 90.—The same disease commencing in the hyoid fossa. The left vocal cord is seen to be paralyzed. Male patient, æt. 60.

Fig. 91.—Encephaloid cancer of the larynx, occurring in a female patient, æt. 47. The disease had been diagnosed by another practitioner six months previously. This drawing was made in March, 1877, very shortly before death.



Fig. 80.



Fig. 81.



Fig. 82.



a Fig. 83.



Fig. 84.



Fig. 85.



Fig. 86.



Fig. 87.



Fig. 88.



Fig. 89.



Fig. 90.



Fig. 91.

Drawn from nature and on stone by George Braine

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DISEASES OF THE THROAT.

PLATE X.

NEUROSES OF THE LARYNX.

Fig. 92.—Appearance of normal larynx after death, showing the “cadaveric” position of the vocal cords ; this is also their position during quiet respiration.

Fig. 93.—Bilateral paralysis of adductors (crico-arytenoidei laterales and arytenoideus). Appearance in attempted phonation. (Page 279.)

Fig. 94.—Unilateral paralysis of adductors of left cord. Appearance in attempted phonation. (Page 282.)

Fig. 95.—Bilateral paralysis of abductors (crico-arytenoidei postici). Appearance with deep inspiratory effort. (Page 283.)

Fig. 96.—Unilateral paralysis of left abductor. Appearance in deep inspiration. The affected cord is seen to be in the cadaveric position. (Page 286.)

Fig. 97.—The same condition. Appearance in phonation ; the right cord is seen to come beyond the median line, while the left is found in the cadaveric position. (Page 286.)

Fig. 98.—Bilateral paralysis of the laxors (thyro-arytenoidei). (Page 288.)

Fig. 99.—Bilateral paralysis of the arytenoideus. (Page 288.)

Fig. 100.—Bilateral paralysis of the thyro-arytenoidei, and of the arytenoideus. (Page 288.)

PLATE X.



Fig. 93



Fig. 94



Fig. 95



Fig. 96



Fig. 97

Fig. 98



Fig. 98

Carved Drawing and engraved

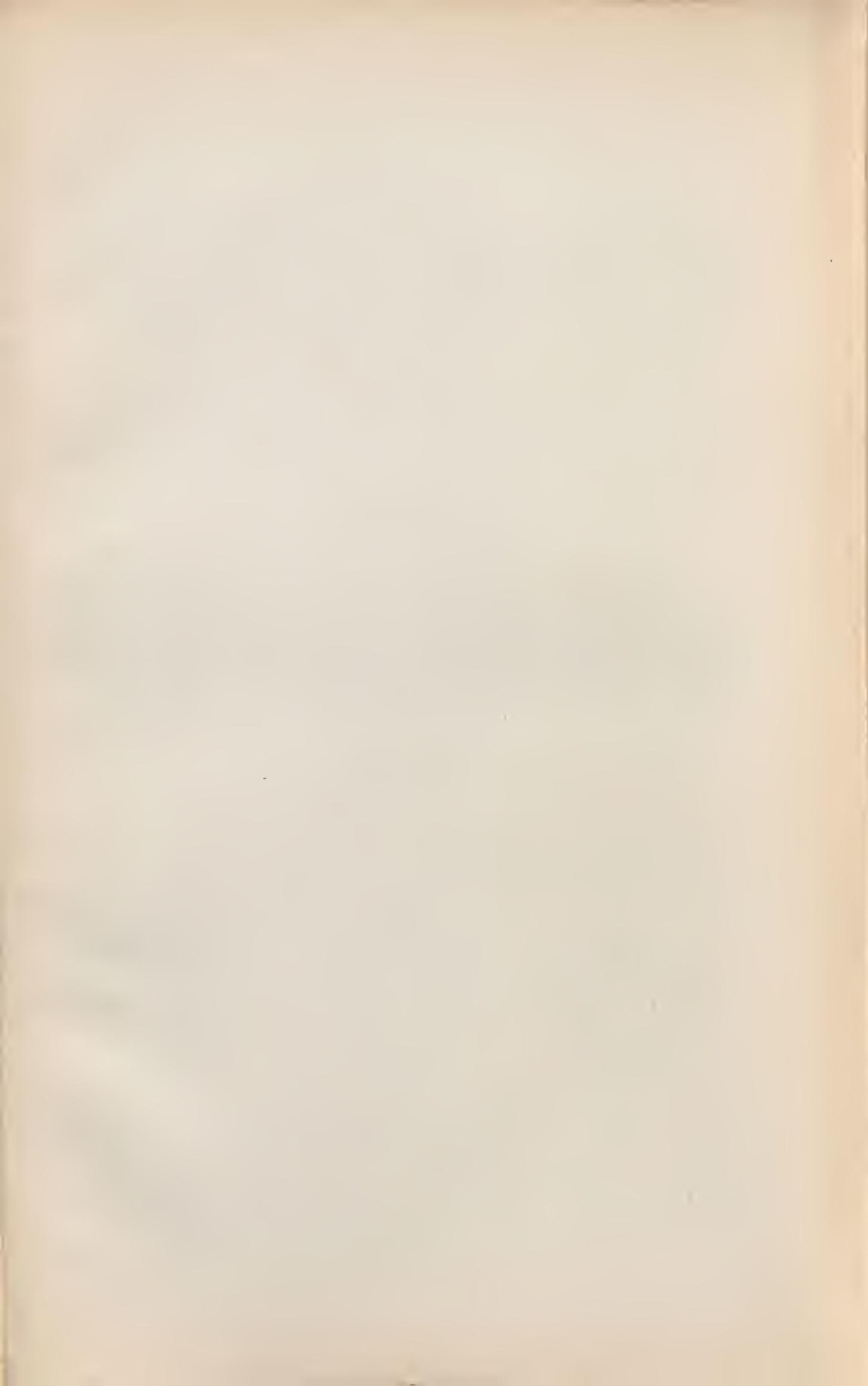


Fig. 99



Fig. 100

Autotype



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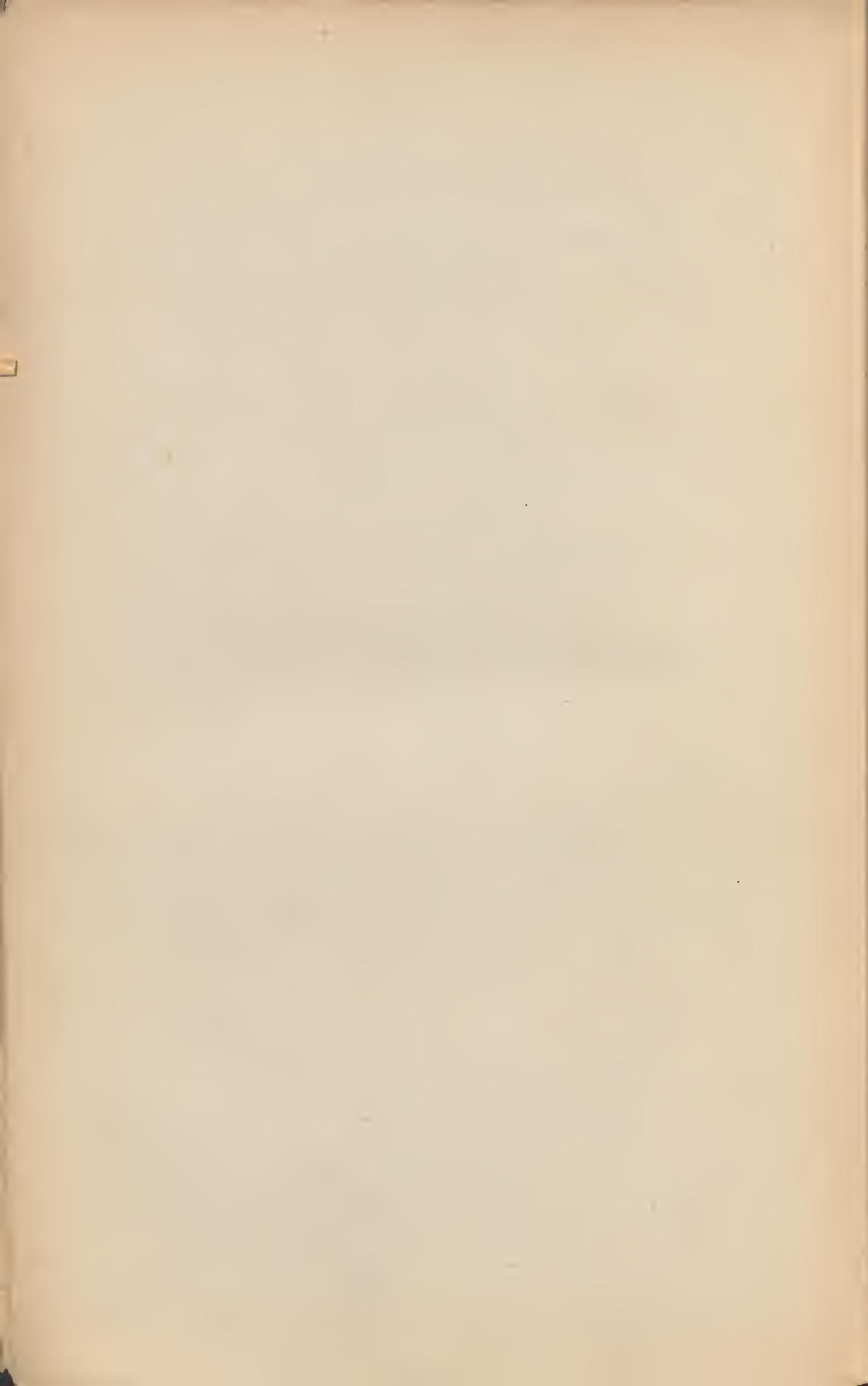
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